देश और उनके निवासी

भाग II

देश और उनके निवासी

भाग II

(कक्षा 7 के लिए भूगोल की पाठ्यपुस्तक)

सम्पादक
शान्ति स्वरूप रस्तोगी



राष्ट्रीय शैक्षिक अनुसंधान और प्रशिक्षण परिषद्

प्रथम संस्करण

जून 1979

ज्येष्ठ 1901

पुनर्मुद्रण

सितम्बर 1979

आश्विन 1901

अप्रैल 1980

चैत्र 1902

P.D. 30T

मूल्य : 2.45

प्रकाशन विभाग में, श्री विनोद कुमार पंडित, सचिव, राष्ट्रीय शैक्षिक अनुसंधान और प्रशिक्षण परिषद्, श्री अरविंद मार्ग, नई दिल्ली 110016 द्वारा प्रकाशित, तथा इण्डियन प्रिंटिंग वर्क्स, रानी झाँसी रोड, नई दिल्ली 110055 द्वारा मुद्रित ।

आमुख

प्रस्तुत पुस्तक 'देश और उनके निवासी भाग II' सातवीं कक्षा के सामाजिक विज्ञान की पाठ्यपुस्तक 'इतिहास और नागरिक शास्त्र' के साथ-साथ पढ़ी जाने वाली पुस्तक है। यह माध्यमिक-स्तर के भूगोल की तीन पाठ्यपुस्तकों में से दूसरी पाठ्यपुस्तक है। पहली पाठ्यपुस्तक कक्षा 6 के लिए एशिया के संबंध में थी। प्रस्तुत पुस्तक आस्ट्रेलेशिया, उत्तरी अमेरिका तथा दक्षिणी अमेरिका महाद्वीपों के बारे में है। तीसरी पुस्तक (कक्षा 8) में यूरोप, सोवियत रूस और भारत की चर्चा की जाएगी।

यद्यपि इन पुस्तकों का मुख्य उद्देश्य विद्यार्थियों को विभिन्न देशों और उनके निवासियों के बारे में प्रारंभिक ज्ञान देना है, तथापि इनसे भौतिक, आर्थिक तथा प्रायोगात्मक भूगोल के तत्वों पर भी प्रकाश पड़ता है।

राष्ट्रीय शैक्षिक अनुसंधान और प्रशिक्षण परिषद् के पाठ्यक्रम एवं मूल्यांकन विभाग द्वारा पहले तैयार की गई पुस्तक की कमियों को दूर करने एवं नवीन पाठ्यक्रमानुसार कुछ परिवर्तनों की आवश्यकता को ध्यान में रखते हुए प्रस्तुत पुस्तक का निर्माण किया गया है जिसके लिए मैं राजकीय शिक्षा संस्थान, दिल्ली, के श्री शान्ति स्वरूप रस्तोगी का आभारी हूँ।

पाठ्यक्रम तथा पाठ्यपुस्तकों के निर्माण में सुनिश्चित योजना, पुस्तकों के अनुवेक्षण, पुनर्विलोकन और शुद्धिकरण तथा इसे प्रकाशन योग्य अंतिम रूप देने के लिए अत्यधिक कार्यकुशलता तथा परिश्रम की आवश्यकता पड़ती है। इन सबके लिए मैं सामाजिक विज्ञान एवं मानविकी शिक्षा विभाग के अपने सहयोगियों विशेषरूप से प्रो० भालचन्द सदाशिव पारख, डा० कृष्ण लाल जोशी, श्रीमती सविता सिन्हा तथा श्री द्वारका प्रसाद गुप्त का आभारी हूँ।

पाठ्यक्रम निर्माण तथा शिक्षण सामग्री का विकास एक निरंतर गतिशील प्रक्रिया है। अतः अनुभवी अध्यापकों के प्रत्येक सुझाव का सहर्ष स्वागत है। हम इन सुझावों का इस पुस्तक के संशोधित संस्करण में उपयोग करेंगे।

शिव कुमार मित्र
निदेशक
राष्ट्रीय शैक्षिक अनुसंधान और प्रशिक्षण परिषद्

नई दिल्ली

पाठ-सूची

कृतज्ञता-ज्ञापन

इस पाठ्यपुस्तक में प्रयुक्त फोटोग्राफ नीचे लिखी संस्थाओं के सौजन्य से प्राप्त हुए हैं। राष्ट्रीय शैक्षिक अनुसंधान और प्रशिक्षण परिषद् इस सहायता के लिए इन सभी संस्थाओं के प्रति आभार प्रकट करता है :

आस्ट्रेलिया हाई कमीशन, नई दिल्ली (I, II, III, IV); न्यूजीलैंड हाई कमीशन, नई दिल्ली (V, VI, VII); अर्जेंटाइना दूतावास, नई दिल्ली (VIII, X); ब्राजील दूतावास, नई दिल्ली (IX, XI, XII); बर्मा शैल, नई दिल्ली (XIII); कनाडा हाई कमीशन, नई दिल्ली (XIV, XV, XVI, XVIII, XIX, XX); इन्टरनेशनल कम्यूनिकेशन एजेन्सी, अमेरिकन सेन्टर, नई दिल्ली (XVII, XXI, XXII, XXIII)

खंड एक

वायुमंडल और जलमंडल

पृथ्वी के तीन महत्वपूर्ण परिमंडल—वायुमंडल, जलमंडल और स्थलमंडल हैं। जहाँ ये तीनों परिमंडल एक-दूसरे के संपर्क में आते हैं, जीवन केवल उसी भाग में पाया जाता है। इस प्रकार, यह संकरा परिमंडल जिसे जैवमंडल कहते हैं, हमारे लिए बहुत महत्वपूर्ण है। इस खंड में तुम वायुमंडल तथा जलमंडल के बारे में और अधिक जानकारी प्राप्त करोगे।

पृथ्वी की सतह से वायुमंडल का विस्तार सैकड़ों किलोमीटर ऊपर की ओर है। वायुमंडल हमेशा अशान्त रहता है, जिससे मौसम में परिवर्तन होते रहते हैं। पृथ्वी के विभिन्न भागों में सूर्यातप एक समान नहीं मिलता। इसीलिए पृथ्वी पर कई ऊष्मा कटिबंध पाए जाते हैं। तापमान बदलने के साथ वायुमंडलीय दाब में भी परिवर्तन आ जाता है। वायुमंडलीय दाब की घट-बढ़ से वायु में गति उत्पन्न होती है। वायुमंडल में जलवाष्प भी विद्यमान है जिसे बादल, वर्षा, हिमपात आदि के रूप में देखा जा सकता है।

पृथ्वी पर जल महासागरों, समुद्रों, झीलों तथा नदियों एवं हिम तथा बर्फ के रूप में पाया जाता है। इस सारे जल को सामूहिक रूप में जलमंडल कहते हैं। जलमंडल का विस्तार पृथ्वी की सतह के अधिक भाग पर है। सागरों तथा महासागरों का जल कभी भी स्थिर नहीं रहता। इसमें विभिन्न प्रकार की गतियाँ होती रहती हैं। महासागर-धारायें महासागरों के जल की बहुत ही महत्वपूर्ण गतियाँ हैं। ये समीपवर्त्ती क्षेत्रों की जलवायु एवं समुद्र में जहाज चलाने को कई प्रकार से प्रभावित करती हैं।

1

वायु और उसका तापमान

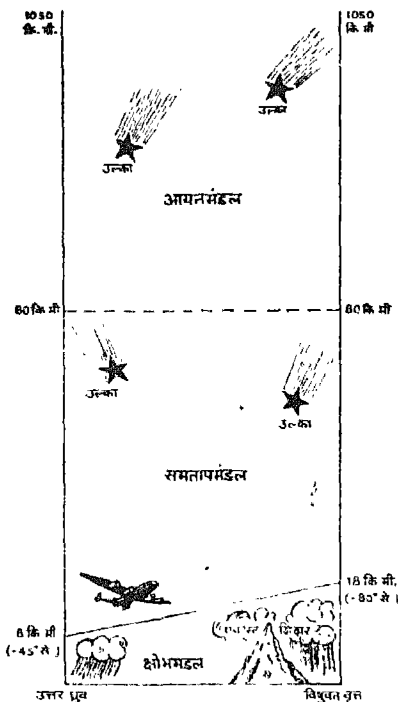
पारिभाषिक शब्द जो तुम जानते हो : **वायुमंडल**—पृथ्वी को चारों ओर से घेरे हुए वायु का आवरण। **अंतस्तट पवन**—समुद्र से तटों की ओर आने वाली पवनें।

तुम जानते हो कि वायुमंडल पृथ्वी का वह परिमंडल है जो उसे चारों ओर से घेरे हुए है। यह पृथ्वी की सतह से लगभग 1600 किलोमीटर की ऊँचाई तक फैला हुआ है। वायुमंडल पृथ्वी की सतह के निकट अधिक घना है। हम पृथ्वी की सतह से ज्यों-ज्यों ऊपर जाते हैं वायुमंडल त्यों-त्यों विरल होता जाता है।

वायुमंडल अनेक गैसों का मिश्रण है। इसमें नाइट्रोजन लगभग 78 प्रतिशत और ऑक्सीजन लगभग 21 प्रतिशत होती है। इनके अलावा कई अन्य गैसें जैसे—ऑरगन और कार्बनडाइऑक्साइड की भी बहुत थोड़ी मात्रा होती है। वायुमंडल के निचले भाग में जल-वाष्प तथा धूलि-कण पाये जाते हैं। वायुमंडल में विद्यमान विभिन्न गैसें, जल-वाष्प और धूलि-कण मनुष्य के लिए किस प्रकार उपयोगी हैं?

वायुमंडल को चार प्रमुख परतों में बाँटा जाता है। इनको क्षोभमंडल, समतापमंडल, आयनमंडल तथा बहिर्मंडल के नाम से जाना जाता है। इन परतों को एक-दूसरे से अलग करने वाली कोई निश्चित सीमा नहीं है।

क्षोभमंडल, वायुमंडल का सबसे घना भाग है। वायुमंडल की केवल इसी परत में ही सभी मौसमी परिवर्तन होते हैं। यह घनी परत दिन में सूर्य की अत्यधिक गर्मी से हमारी रक्षा करती है और रात के समय पृथ्वी के धरातल को अधिक ठंडा नहीं होने देती। पृथ्वी की सतह से ज्यों-ज्यों ऊपर जाते हैं वायुमंडल के इस भाग में तापमान तथा वायुदाब दोनों ही कम होते जाते हैं। इन्हीं सब कारणों से वायुमंडल की यह निचली तथा सबसे घनी परत मनुष्य के लिए बहुत ही महत्वपूर्ण है।



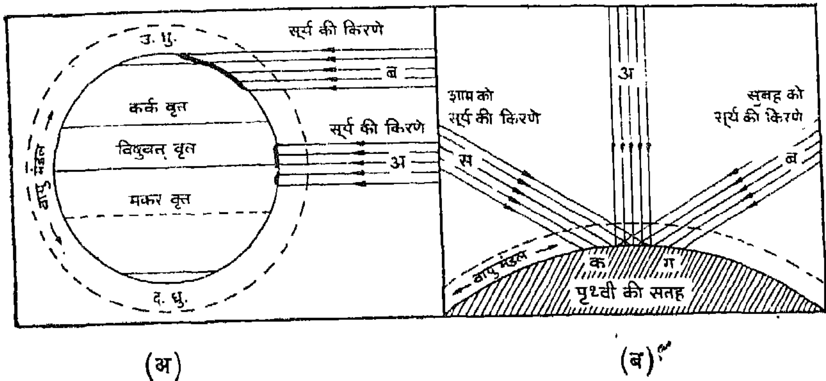
चित्र 1. वायुमंडल की परत
प्रत्येक परत की ऊँचाई तथा मोटाई देखिए।
क्षोभमंडल क्यों बहुत महत्वपूर्ण है?

वायुमंडल कैसे गर्म होता है?

सूर्य हमारे लिए ऊष्मा का प्रमुख स्रोत है। यह ऊष्मा का वितरण चारों तरफ लगातार करता रहता है। सूर्य से चारों ओर फैलने वाली ऊष्मा को **सौर-विकिरण** कहते हैं परन्तु पृथ्वी सूर्य से बहुत छोटी है और उससे बहुत दूर है, इसलिए पृथ्वी को सौर-विकिरण का अत्यन्त अल्प अंश प्राप्त हो पाता है। पृथ्वी को प्राप्त होने वाली सूर्य की ऊष्मा के इस अल्प अंश को **सूर्यातप** कहते हैं। सूर्यातप से तात्पर्य है "सूर्य से आने वाला सौर-विकिरण।"

सूर्यातप मुख्यतः पृथ्वी की सतह को गर्म करता है। यह वायुमंडल को इतना गर्म नहीं करता जितना कि धरातल को। पृथ्वी की गर्म सतह वायुमंडल की निचली परतों को गर्म कर देती है। इसलिए यह कहना चाहिए कि वायुमंडल मुख्यतः नीचे से पृथ्वी की गर्म सतह द्वारा गर्म होता है।

सूर्य से पृथ्वी द्वारा प्राप्त की हुई ऊष्मा का कुछ भाग पुनः अंतरिक्ष में खो जाता है। ऊष्मा की इस कमी को दिन के समय हम अनुभव नहीं कर पाते क्योंकि इस समय पृथ्वी सूर्य से लगातार ऊष्मा लेती रहती है। सूर्यास्त के बाद सूर्यातप बन्द हो जाता है, और पृथ्वी की गर्म सतह अधिक तेज़ी से ऊष्मा खोने लगती है। इस प्रकार रात के समय धरातल ठंडा हो जाता है। पृथ्वी को मिलने वाला सौर-विकरण मुख्यतः दो बातों पर निर्भर करता है—पहला सूर्य से आने वाली किरणों का धरातल पर पड़ने वाला कोण और दूसरा दिन की लम्बाई।



(अ) (ब)

चित्र 2. पृथ्वी पर विभिन्न कोणों से पड़ने वाली सूर्य की किरणें

चित्र में देखो कि सूर्य की किरणें ऊँचे अक्षांशों में धरातल के बड़े क्षेत्र पर फैलती हैं और निम्न अक्षांशों में वे छोटे से क्षेत्र पर केन्द्रित हो जाती हैं। दोपहर को सूर्य की किरणों से सुबह अथवा शाम की अपेक्षा अधिक ऊष्मा क्यों मिलती है ?

सूर्य की किरणें पृथ्वी की सतह पर जब लम्बवत् या लगभग सीधी पड़ती हैं तो वे छोटे से क्षेत्र पर ही केन्द्रित हो जाती हैं। इसलिए उनसे अधिक ऊष्मा प्राप्त होती है। दूसरी ओर किरणें जब तिरछी होकर पड़ती हैं तो वे धरातल के अधिक भाग पर फैल जाती हैं, इस कारण उनसे कम ऊष्मा मिलती है। यही कारण है कि दोपहर के समय में सूर्य की किरणों से अधिक ऊष्मा मिलती है और सुबह तथा शाम को कम।

तुम जानते हो कि ग्रीष्म ऋतु में दिन लम्बे और रातें छोटी होती हैं। इसके विपरीत शीत ऋतु में दिन छोटे और रातें लम्बी होती हैं। अतः ग्रीष्म ऋतु में शीत ऋतु की अपेक्षा सूर्यातप अधिक मिलता है।

तापमान और उसका वितरण

किसी स्थान का **तापमान** वहाँ के धरातल से कुछ मीटर ऊपर की वायु की ऊष्मा का मान होता है। इसे तापमापी द्वारा मापा जाता है। तापमान का वितरण पृथ्वी की सतह पर एक समान नहीं है। यह सामान्यतः विषुवत वृत्त से ध्रुवों की ओर कम होता जाता है। तुम जानते हो कि उष्ण-कटिबंध बहुत गर्म है और शीत-कटिबंध अत्यन्त ठंडा। उष्ण-कटिबन्ध में तापमान प्रायः ऊँचे क्यों होते हैं?

यह भी देखा गया है कि वायुमंडल की निचली परत का तापमान ऊँचाई बढ़ने के साथ-साथ घटता जाता है। इसका कारण यह है कि वायुमंडल अधिकतर ऊष्मा सूर्य से सीधे न प्राप्त कर, पृथ्वी की गर्म हुई सतह से प्राप्त करता है।

तापमान को प्रभावित करने वाले कारक

तुम जानते हो कि वायुमंडल के तापमान का सीधा सम्बन्ध सूर्यातप से है। चूँकि सूर्यातप कई कारकों पर निर्भर है, इसीलिए तापमान भी उन कारकों द्वारा प्रभावित होता है। तापमान के वितरण को प्रभावित करने वाले प्रमुख कारक हैं अक्षांश, ऊँचाई और समुद्र से दूरी।

अक्षांश : हम जैसे-जैसे उच्च अक्षांशों की ओर जाते हैं तापमान घटता जाता है। विषुवत वृत्त के आसपास के स्थानों की अपेक्षा इससे दूर के स्थान ठंडे होते हैं। उदाहरण के लिए, साइबेरिया, अफ्रीका और एशिया के विषुवतीय क्षेत्रों से बहुत ठंडा है। इसी प्रकार कलकत्ता की अपेक्षा टोकियो ठंडा है। इसका कारण यह है कि हम विषुवत वृत्त से जैसे-जैसे ध्रुवों के निकट जाते हैं, सूर्य की किरणों का कोण घटता जाता है। उच्च-अक्षांशों पर पड़ने वाली सूर्य की किरणों को वायुमंडल के अधिक भाग में से भी गुज़रना पड़ता है। इसीलिए विषुवतीय क्षेत्रों की अपेक्षा ध्रुवों पर सूर्य की किरणों से कम ऊष्मा मिलती है।

ऊँचाई : समुद्र-तल से ज्यों-ज्यों ऊँचाई बढ़ती जाती है, तापमान सामान्यतः घटता जाता है। उदाहरण के लिए पर्वत-शिखर, पर्वतों के निचले भागों से अधिक

ठंडे होते हैं। सामान्यतः प्रति 165 मीटर ऊपर चढ़ने पर तापमान लगभग एक डिग्री सेलसियस कम हो जाता है। यही कारण है कि शिमला लुधियाना से ठंडा है, यद्यपि दोनों स्थान लगभग एक ही अक्षांश रेखा पर स्थित हैं। इसी प्रकार नैरोबी भी काफी ठंडा है, यद्यपि यह विषुवत रेखा के पास स्थित है।

समुद्र से दूरी : जो स्थान समुद्र के निकट स्थित हैं उनके गर्मियों और सर्दियों के तापमानों में बहुत कम अंतर होता है। ऐसे स्थान **समजलवायु** का आनन्द उठाते हैं। दूसरी ओर जो स्थान समुद्र से बहुत दूर हैं उनके गर्मियों और सर्दियों के तापमानों में बहुत अधिक अंतर होता है। इसलिए उन स्थानों की **अतिविषम जलवायु** होती है।

हम सभी यह जानते हैं कि स्थल भाग जल भाग की अपेक्षा जल्दी गर्म हो जाता है और जल्दी ठंडा। गर्मियों में स्थल भाग समुद्र की अपेक्षा गर्म रहता है। इसलिए समुद्र की ओर से चलने वाली पवनें या अंतस्तट पवनें समुद्र के निकट भू-भागों पर अपना ठंडा प्रभाव डालती हैं। परन्तु जो स्थान समुद्र से दूर होते हैं उन पर समुद्र की शीतल पवनों का प्रभाव नहीं पड़ पाता और वे बहुत गर्म होते हैं।

दूसरी ओर सर्दियों में धरातल ऊष्मा को शीघ्र छोड़ देता है और ठंडा हो जाता है। परन्तु समुद्र स्थल की भाँति अपनी गर्मी जल्दी नहीं छोड़ पाते और वे कोष्ण बने रहते है। तुम जानते हो कि पानी गर्म या ठंडा होने में भूमि की अपेक्षा अधिक समय लेता है. अर्थात् वह धीरे-धीरे गर्म या धीरे-धीरे ठंडा होता है। इसलिए सर्दियों में कोष्ण समुद्र अपने पास के तटीय भागों को कोष्ण बनाए रखते हैं, परन्तु जो भाग समुद्र से दूर है वे ठंडे रहते हैं। अब तुम बता सकते हो कि नागपुर, बम्बई अथवा कलकत्ता की अपेक्षा गर्मियों में अधिक गर्म तथा सर्दियों में अधिक ठंडा क्यों रहता है ?

नवीन पारिभाषिक शब्द जो तुमने इस पाठ में पढ़े : सूर्यातप—पृथ्वी की सतह पर आने वाला सौर-विकरण। **तापमान**—धरातल से कुछ मीटर ऊपर की वायु में उपस्थित ऊष्मा का मान।

स्वाध्याय

पुर्नविचार

1. निम्नलिखित प्रश्नों के उत्तर दो :

   (क) वायुमंडल की विभिन्न परतें कौन-कौन सी हैं ?

   (ख) वायु में पाई जाने वाली प्रमुख गैसों के नाम बताओ।

   (ग) हमारे लिए क्षोभमंडल क्यों महत्वपूर्ण है।

   (घ) ऊँचाई बढ़ने के साथ-साथ तापमान क्यों घटता है ?

2. सम जलवायु और अति विषम जलवायु में अंतर स्पष्ट करो।

3. निम्नलिखित प्रत्येक के लिए एक पारिभाषिक शब्द लिखो :

   (क) पृथ्वी को चारों ओर से घेरे हुए वायु का आवरण।

   (ख) पृथ्वी की सतह पर आने वाला सौर-विकरण।

   (ग) समुद्र से तटों की ओर आने वाली वायु।

4. नीचे दिए तीनों कालमों से सही युग्म बनाओ :

स्थान	तापमान को नियन्त्रित करने वाले कारक	जलवायु
(क) बम्बई	विषुवत वृत्त से दूरी	अतिविषम
(ख) सिंगापुर	समुद्र से दूरी	शीत
(ग) किलिमंजारी	ऊँचाई	विषुवतीय
(घ) दिल्ली	समुद्र से निकटता	सम

5. तापमान को प्रभावित करने वाले तीन प्रमुख कारक कौन-से हैं ? समुद्र से दूरी किसी स्थान के तापमान को किस प्रकार प्रभावित करती है, संक्षेप में लिखो।

मानचित्र-कार्य

6. अपनी मानचित्रावली में दिए गए जनवरी और जुलाई के तापमानों को दिखाने वाले संसार के मानचित्रों का ध्यानपूर्वक अध्ययन करो। दोनों मानचित्रों के उन क्षेत्रों की तुलना करो जिनका तापमान सबसे अधिक है। इससे तुम किस निष्कर्ष पर पहुँचते हो?

विचार-विमर्श

7. "ध्रुवीय तथा विषुवतीय जलवायु"

कक्षा के छात्रों को दो समूहों में विभाजित करो। एक समूह ध्रुवीय जलवायु और दूसरा समूह विषुवतीय जलवायु के बारे में बतलाये। इसके बाद दोनों समूह मिलकर प्रत्येक जलवायु के कारणों पर विचार करें।

2

गतिमय वायु

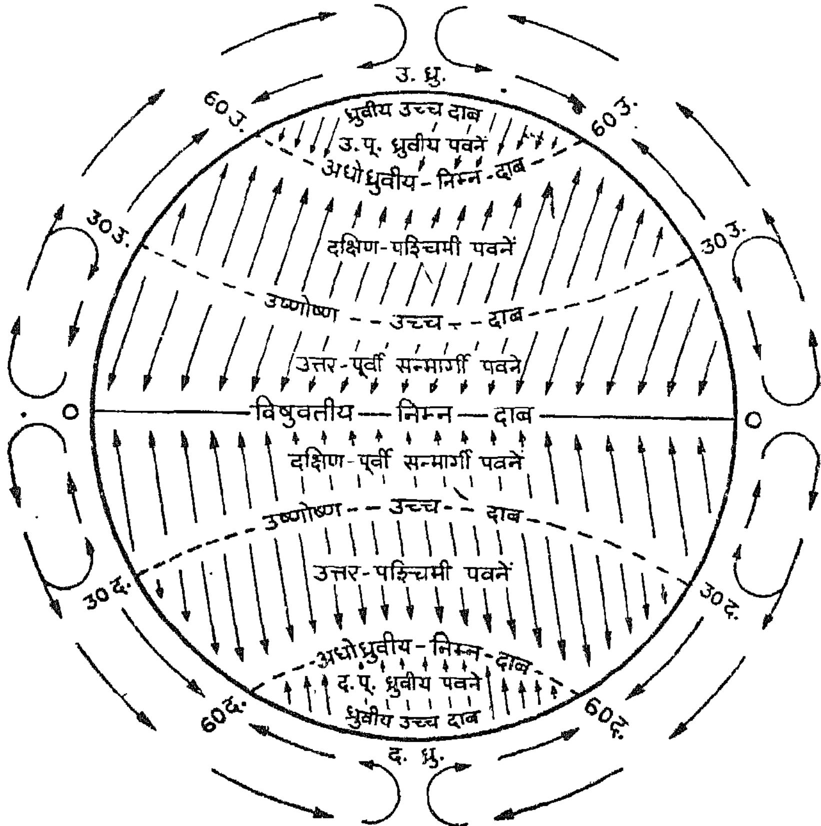
पारिभाषिक शब्द जो तुम जानते हो : उष्ण कटिबंध—वह क्षेत्र जिसमें मध्याह्न-सूर्य वर्ष में दो बार ठीक सिर के ऊपर देखा जा सकता है। इस क्षेत्र की सीमाएँ कर्क व मकर वृत्त हैं। पवन—पृथ्वी की सतह के साथ क्षैतिज गति वाली वायु।

वायु हमारे चारों ओर हर समय पाई जाती है। यद्यपि हम वायु को पुस्तक अथवा अन्य किसी वस्तु की भाँति प्रत्यक्ष रूप से नहीं देख सकते, लेकिन उसका महत्व किसी अन्य वस्तु से कम नहीं। तुम जानते हो कि हम वायु के अत्यन्त विशाल आवरण के नीचे रहते हैं। इस वायु आवरण की ऊँचाई पृथ्वी की सतह से लगभग 1600 किलोमीटर ऊपर है। वायु के इस विशाल आवरण का भार बहुत अधिक है। समुद्र तल पर प्रति वर्ग सेंटीमीटर भाग पर वायु स्तम्भ का भार एक किलोग्राम से कुछ अधिक होता है। तुम्हें जानकर आश्चर्य होगा कि हमारे पूरे शरीर पर यह भार कई टन है। इस अत्यन्त भारी बोझ से हम पिस क्यों नहीं जाते ? अपने इस भार के कारण वायु दाब डालती है। पृथ्वी की सतह पर वायुमंडल अपने भार के कारण जो दाब डालता है उसे **वायुमंडलीय दाब** कहते हैं। वायुमंडल का दाब **वायु दाबमापी यंत्र** अथवा **बैरोमीटर** से मापा जाता है।

समुद्र तल पर वायुमंडल का दाब सबसे अधिक होता है। जब हम किसी पर्वत पर चढ़ते हैं, या वायुयान द्वारा ऊँचाई पर जाते हैं तो वायुमंडलीय दाब

घटता जाता है। इसका कारण यह है कि समुद्र तल की अपेक्षा ऊँचाई पर हमारे ऊपर वायु की मात्रा कम होती है, और उसका घनत्व भी ऊँचाई के साथ घटता जाता है। अतः ऊँचाई होने के साथ-साथ वायुमंडलीय दाव घटता जाता है।

संसार की स्थाई वायुदाब पेटियाँ



चित्र 3. दाब कटिबंध तथा भू-मंडलीय पवनें

चित्र में संसार की दाब कटिबंध और भू-मंडलीय पवनों को देखो। मालूम करो कि पवनें तिरछी क्यों चलती हैं?

वायुमंडल का दाब पृथ्वी की सतह पर सब जगह एक समान नहीं है। यह एक स्थान से दूसरे स्थान पर अलग-अलग पाया जाता है। तुम्हारी राय में इसका क्या कारण हो सकता है?

विषुवत वृत्त के निकट ऊँचा तापमान होने से वायु की निचली परतें गर्म हो जाती हैं। इससे वायु फैलकर तेज़ी से ऊपर उठ जाती है और यहाँ निम्न दाब का क्षेत्र बन जाता है। विषुवत वृत्त पर यह निम्न दाब का क्षेत्र सारी पृथ्वी को एक पतली-सी पेटी के रूप में घेरे हुए है। निम्न दाब की इस पेटी को **विषुवतीय निम्न दाब कटिबंध** या डोलड्रम कहते हैं। उत्तर और दक्षिण ध्रुवों पर अत्यन्त सर्दी पड़ने के कारण वहाँ वायु ठंडी होकर नीचे की ओर उतरती है और इकट्ठी हो जाती है। इससे यहाँ उच्च दाब के क्षेत्र बन जाते हैं और इन्हें **ध्रुवीय उच्च दाब कटिबंध** कहते हैं।

विषुवतीय क्षेत्रों में ऊपर उठने वाली गर्म वायु ऊपर जाकर ठंडी हो जाती है और ध्रुवों की ओर बढ़ने लगती है। लगभग 30° उत्तर तथा दक्षिण अक्षांशों पर पहुँचकर यह नीचे उतरने लगती है। नीचे उतरने वाली वायु इन अक्षांशों पर उच्च दाब के क्षेत्र बना देती है और इन क्षेत्रों को **उपोष्ण उच्च दाब कटिबंध** या **अश्व अक्षांश के क्षेत्र** कहते हैं। लगभग 60° उत्तर व दक्षिण अक्षांशों पर ध्रुवीय उच्च दाब तथा उपोष्ण उच्च दाब क्षेत्रों से आने वाली वायु एक-दूसरे से टकराती है और यहाँ निम्न वायुदाब क्षेत्र का निर्माण करती है। इस क्षेत्र को **अधो ध्रुवीय निम्न दाब कटिबंध** कहते हैं। ये सभी दाब कटिबंध पूर्णतया स्थाई नहीं होते। ऋतु बदलने के साथ वे उत्तर अथवा दक्षिण की ओर कुछ खिसकते रहते हैं।

पवन

तुम जानते हो कि पृथ्वी की सतह के साथ-साथ वायु की क्षैतिज गति को पवन कहते हैं। वायु के सीधे ऊपर की ओर उठने अथवा धरातल की ओर नीचे उतरने की गति को **वायु-प्रवाह** कहते हैं। हम जानते हैं कि पवनें सभी दिशाओं में बहती हैं। पवनों को पहचानने के लिए उनका नाम उस दिशा पर रखा जाता है जिस दिशा से वे आती हैं। उदाहरण के लिए पूर्व की ओर से आने वाली पवन को पूर्वी पवन के नाम से पुकारा जाता है। हम सामान्यतः पवन की गति को किलोमीटर प्रति घंटा में व्यक्त करते हैं और यह एक यंत्र द्वारा मापी जाती

है जिसे **पवन वेगमापी** कहते हैं। पवन की दिशा को **पवन-दिशासूचक यंत्र** से जाना जाता है।

जब दो स्थानों के वायुदाब में अन्तर हो जाता है तो पवन उच्च दाब क्षेत्र से निम्न दाब क्षेत्र की ओर चलना शुरू कर देती है। पवन तब तक चलती रहती है जब तक दाब में अन्तर बना रहता है। तुम यह जानते हो कि पृथ्वी की सतह पर स्थायी वायुदाब कटिबंध हैं। ये कटिबंध स्थायी पवनों को जन्म देते हैं। पृथ्वी का घूर्णन दोनों गोलार्धों में पवनों की दिशा को प्रभावित करता है। ये पवनें उत्तरी गोलार्ध में अपने दायें तथा दक्षिणी गोलार्ध में अपने बायें ओर मुड़ जाती हैं।

संसार की स्थाई पवन पेटियाँ

कुछ पवनें पूरे साल एक ही दिशा से चलती रहती हैं। ये पृथ्वी के उच्च दाब कटिबंधों से निम्न दाब कटिबंधों की ओर बहती हैं। इन्हें **सनातन या स्थायी या भू-मंडलीय** पवनें कहते हैं। संमार्गी, पश्चिम तथा ध्रुवीय तीन प्रकार की भू-मंडलीय पवनें हैं जो पूरे वर्ष स्थाई रूप से अपने-अपने कटिबंध में बहती रहती हैं।

संमार्गी पवनें : पवनें जो उपोष्ण उच्च दाब कटिबंध से विषुवतीय निम्न दाब कटिबंध की ओर चलती हैं, उन्हें **संमार्गी पवनें** कहते हैं। इन पवनों को संमार्गी इसलिए कहा जाता है कि वह सदैव एक ही मार्ग पर चलती हैं। संमार्गी पवनें मुख्यत: उष्ण कटिबंध में चला करती हैं। इन पवनों की सामान्य दिशा पूर्व होती है इसलिए इन्हें पूर्वी पवनों के नाम से भी पुकारते हैं। संमार्गी पवनों की वास्तविक दिशा उत्तरी गोलार्ध में उत्तर-पूर्व और दक्षिणी गोलार्ध में दक्षिण-पूर्व होती है।

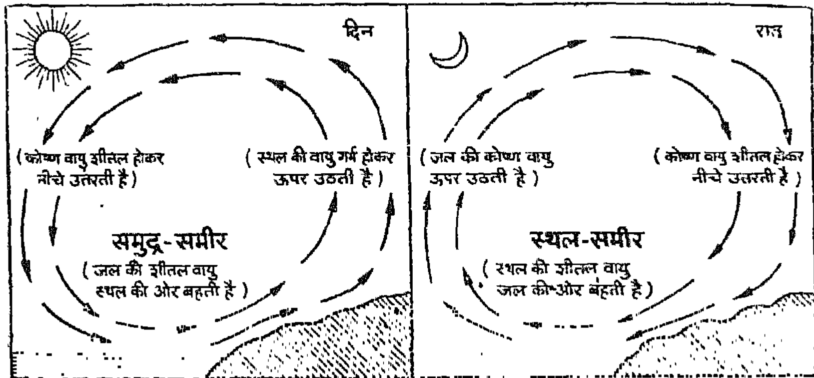
पश्चिमी पवनें : पवनें जो उपोष्ण उच्च दाब कटिबंध से अधो ध्रुवीय निम्न दाब कटिबंध की ओर चलती हैं **पश्चिमी पवनें** कहलाती हैं। इन पवनों की सामान्य दिशा पश्चिमी होने के कारण ही इन्हें पश्चिमी पवनें कहा जाता है। संमार्गी पवनों की भांति ये पवनें पूर्णतया एक ही मार्ग पर नहीं चलतीं। पश्चिमी पवनों की वास्तविक दिशा उत्तरी गोलार्ध में दक्षिण-पश्चिम और दक्षिणी गोलार्ध में उत्तर-पश्चिम होती है।

ध्रुवीय पवनें : पवनें जो ध्रुवीय उच्च दाब क्षेत्रों से अधो ध्रुवीय निम्न दाब की ओर बहती हैं **ध्रुवीय पवनें** कहलाती हैं। इन पवनों की दिशा उत्तरी गोलार्ध में उत्तर-पूर्व और दक्षिणी गोलार्ध में दक्षिण-पूर्व होती है। ध्रुवीय पवनें अत्यन्त ठंडी और शुष्क होती हैं।

कुछ अन्य पवनें

भू-मंडलीय पवनों के अतिरिक्त कुछ पवनें ऐसी हैं जो दिन अथवा वर्ष के किसी एक भाग में मुख्यतः एक ही दिशा से बहती हैं और दूसरे भाग में विपरीत दिशा से। इन पवनों को **आवर्ती पवनें** कहते हैं। स्थल-समीर, समुद्र-समीर तथा मानसून पवनें आवर्ती पवनों के उदाहरण हैं।

समुद्र-समीर तथा स्थल-समीर : ये पवनें तटीय भागों पर अनुभव की जाती हैं। दिन के समय स्थल, समुद्र की अपेक्षा शीघ्र गर्म हो जाता है। स्थल की वायु गर्म होकर फैलती है और ऊपर उठ जाती है। इस कारण स्थल पर निम्न वायदाब का क्षेत्र बन जाता है। दूसरी ओर समुद्र, स्थल की अपेक्षा शीतल

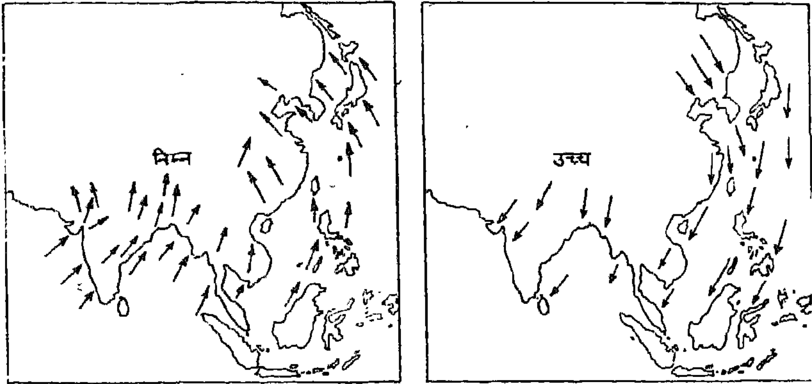


चित्र 4. समुद्र-समीर तथा स्थल-समीर

समुद्र-समीर दिन के समय तथा स्थल-समीर रात के समय चलती हैं, ऐसा क्यों ?

रहता है। अतः समुद्र पर उच्च वायुदाब का क्षेत्र बन जाता है। इस प्रकार दिन में समुद्र के उच्च दाब से शीतल पवनें स्थल के निम्न दाब की ओर चलती

हैं। इन पवनों को समुद्र-समीर कहते हैं। सूर्यास्त के बाद स्थल भाग समुद्र की अपेक्षा जल्दी ठंडा हो जाता है। अत: समुद्र की अपेक्षा स्थल पर वायुदाब अधिक होता है इसलिए रात के समय स्थल से ठंडी वायु समुद्र की ओर चलती है और इसे **स्थल-समीर** कहते हैं।



चित्र 5. मानसून पवनें

पवनों की सामान्य गति देखिए। गर्मियों में वे समुद्र से स्थल की ओर, और सर्दियों में स्थल से समुद्र की ओर चलती हैं। इस प्रकार मानसून पवनों की दिशा ऋतु के अनुसार पूर्णतया बदल जाती है। क्या आप इस कथन से सहमत हैं ?

मानसून पवनें : मानसून मौसमी पवनें हैं। वे बहुत बड़े पैमाने पर समुद्र-समीर व स्थल-समीर हैं। मानसून की दिशाएँ एशिया महाद्वीप के बहुत बड़े भाग पर अच्छी तरह विकसित होती हैं, क्योंकि गर्मियों और सर्दियों में इस महाद्वीप के आंतरिक भागों और इसके चारों ओर के समुद्रों पर तापमान एवं वायुदाब की दिशाएँ पूर्णतया भिन्न होती हैं। ग्रीष्म ऋतु में एशिया का आंतरिक भू-भाग समुद्रों की अपेक्षा अधिक गर्म हो जाता है और इसलिए स्थल भाग पर निम्न वायुदाब विकसित हो जाता है। अत: ग्रीष्म ऋतु में कोष्ण और आर्द्र पवनें लगातार समुद्र से स्थल की ओर बहती हैं। शीत ऋतु में महाद्वीप के आंतरिक भाग पर उच्च वायुदाब विकसित हो जाता है। इसलिए शीत ऋतु में स्थल से

समुद्र की ओर शीतल व शुष्क पवनें लगातार चलती हैं। इस प्रकार एक ऋतु से दूसरी ऋतु में पवनों की दिशा बिल्कुल बदल जाती है। पवनें जो अपनी दिशा ऋतु के अनुसार पूर्णतया बदल लेती हैं, उन्हें **मानसून पवनें** कहते हैं। मानसून पवनें मुख्यत: उष्ण कटिबंध में चलती हैं।

कुछ पवनों की गति व दिशा निश्चित नहीं होती वे अपनी दिशा बदलती रहती हैं। ऐसी पवनों को **परिवर्तनशील** पवनें कहते हैं। चक्रवात और प्रति-चक्रवात में जो पवनें चलती हैं वे परिवर्तनशील पवनों के उदाहरण हैं। **चक्रवात** निम्न वायुदाब का एक क्षेत्र है जिसके चारों ओर उच्च वायुदाब होता है। इसमें चारों ओर से पवनें बड़ी तेज़ और चक्र गति से निम्न दाब केन्द्र की ओर चलती हैं। चक्रवात के साथ प्राय: बहुत तेज वर्षा होती है और तेज पवनों से भारी नुकसान भी होता है। इसके दूसरी ओर **प्रतिचक्रवात** उच्च वायुदाब का वह क्षेत्र है जिसके चारों ओर निम्न दाब होता है। इसमें पवनें उच्च दाब केन्द्र से चारों तरफ बाहर की ओर चलती हैं। प्रतिचक्रवात में हल्की पवनें चलती हैं, आकाश साफ रहता है और वर्षा नहीं होती।

पृथ्वी के विभिन्न भागों में छोटे-छोटे क्षेत्रों पर स्थानीय पवनें चला करती हैं। ये पवनें केवल थोड़े समय के लिए ही चलती हैं। इनमें से अधिकतर मौसमी पवनें हैं और इनके अपने-अपने स्थानीय नाम हैं। इन्हें **स्थानीय पवनें** कहते हैं। स्थानीय पवनें ठंडी तथा गर्म दोनों प्रकार की होती हैं और स्थानीय मौसम पर अपना प्रभाव डालती हैं। उदाहरण के लिए, उत्तर भारत के मैदानों में मई और जून के महीनों में गर्म शुष्क और धूल भरी पवनें चलती हैं। इनको 'लू' के नाम से पुकारते हैं। इन गर्म पवनों से 'लू' लगने का डर रहता है।

नवीन पारिभाषिक शब्द जो तुमने इस पाठ में पढ़े : संमार्गी पवनें—वे पवनें जो उपोष्ण उच्च दाब क्षेत्र से उत्पन्न होकर विषुवतीय निम्न दाब क्षेत्र की ओर चलती हैं। **चक्रवात**—तेजी से चक्र-गति करता हुआ अन्दर की ओर बहने वाली वायु का भाग, जिसके केन्द्र में निम्न दाब होता है। **प्रतिचक्रवात**—चक्र गति करता हुआ बाहर की ओर बहने वाली वायु का भाग, जिसके केन्द्र में उच्च दाब होता है।

स्वाध्याय

पुनर्विचार

1. नीचे दिए प्रश्नों के संक्षिप्त उत्तर लिखो :
   (क) चार प्रकार की पवनों के नाम बताओ और प्रत्येक का एक-एक उदाहरण लिखो।
   (ख) मानसून किसे कहते हैं ?
   (ग) समुद्र तल से ऊँचाई बढ़ने के साथ-साथ तापमान क्यों घटता है ?
2. अंतर स्पष्ट करो :
   (क) स्थल-समीर और समुद्र-समीर।
   (ख) चक्रवात और प्रतिचक्रवात।
3. निम्नलिखित प्रत्येक के लिए एक पारिभाषिक शब्द बताओ :
   (क) दिल्ली में मई में दिन के समय चलने वाली गर्म और शुष्क पवनें।
   (ख) बम्बई की ओर से कल्याण की ओर दिन में चलने वाली आर्द्र पवनें।
   (ग) कलकत्ता की ओर से बंगाल की खाड़ी की ओर रात में चलने वाली पवनें।
   (घ) अटलांटिक महासागर से उत्तर-पश्चिम यूरोप की ओर चलने वाली पवनें।
   (ङ) अटलांटिक महासागर से साइबेरिया की ओर चलने वाली पवनें।
4. पृथ्वी के उच्च और निम्न दाब कटिबंधों का संक्षेप में वर्णन करो और बताओ कि भू-मंडलीय पवनें किस प्रकार बनती हैं। अपने उत्तर को उपयुक्त चित्र द्वारा समझाओ।

मानचित्र-कार्य

5. भारत के रेखा-मानचित्र पर सर्दी और गर्मी की मानसून पवनों की दिशाओं को अलग-अलग रंग के तीरों द्वारा दिखाओ। इन पवनों की दिशा की तुलना भू-मंडलीय पवनों की दिशा से करो।

विचार-विमर्श

6. "मानसून की पहली झड़ी"

   तेज वर्षा के बारे में विद्यार्थी अपने-अपने अनुभव बताएँ। इसके बाद व्याख्या करने का प्रयत्न करें कि उनके स्थान पर वर्षा किस प्रकार होती है।

3

वायु और उसकी आर्द्रता

पारिभाषिक शब्द जो तुम जानते हो : जलवाष्प—वायु में गैस के रूप में उपस्थित जल । वर्षा-वहन पवनें—वर्षा लाने वाली आर्द्र पवनें ।

तुम जानते हो कि वायुमंडल के निचले भागों में जलवाष्प भी होती है। वायुमंडल में अधिकतर जलवाष्प सागरों, झीलों और सरिताओं के जल के वाष्पित होने से आती है । जलवाष्प की कुछ मात्रा पेड़-पौधों और जीव-जन्तुओं द्वारा भी वायुमंडल में मिलती रहती है ।

जलवाष्प वायुमंडल की सबसे अधिक परिवर्तनशील गैस है । इसकी मात्रा स्थान-स्थान और समय-समय पर सदा एक सी नहीं रहती । निम्न अक्षांशों और महासागरों के ऊपर जलवाष्प की मात्रा सबसे अधिक होती है । ध्रुवीय क्षेत्रों और स्थल भागों के ऊपर वायुमंडल में जलवाष्प की मात्रा कम होती है। ऋतुओं के अनुसार भी जलवाष्प की मात्रा बदलती रहती है । ग्रीष्म ऋतु में यह अधिक होती है और शीत ऋतु में कम । ऊँचाई के अनुसार भी जलवाष्प की मात्रा घटती जाती है। पृथ्वी की सतह से वायुमंडल में 10 से 12 किलोमीटर तक ऊपर जाने पर जलवाष्प लगभग समाप्त हो जाती है। अन्य गैसों के विपरीत जलवाष्प की यह विशेषता है कि यह द्रव अथवा ठोस के रूप में बदल सकती है या ठोस अथवा द्रव से गैस में परिवर्तित हो सकती है ।

यद्यपि वायुमंडल में जलवाष्प की मात्रा बहुत ही कम है, तथापि वायुमंडल को गर्म अथवा ठंडा करने में इसका महत्व बहुत अधिक है। इसके अतिरिक्त दिन-प्रतिदिन के मौसम को बदलने में भी जलवाष्प का महत्वपूर्ण स्थान है। वास्तव में बादल, वर्षा, हिम, ओला, कोहरा, पाला और ओस का निर्माण वायुमंडल में जलवाष्प के विद्यमान होने के ही कारण होता है।

वाष्पीकरण—क्या तुमने कभी इस पर विचार किया है कि जब भीगे कपड़ों को सुखाने के लिए फैलाया जाता है तो उन पर क्या क्रिया होती है? इन कपड़ों से पानी धीरे-धीरे समाप्त हो जाता है। आखिर यह पानी कहाँ जाता है? वास्तव में यह जलवाष्प बनकर वायु में ही विलीन हो जाता है। इस प्रतिक्रिया को हम देख नहीं सकते। जल के वाष्पित होने की इस प्रक्रिया को **वाष्पीकरण** कहते हैं।

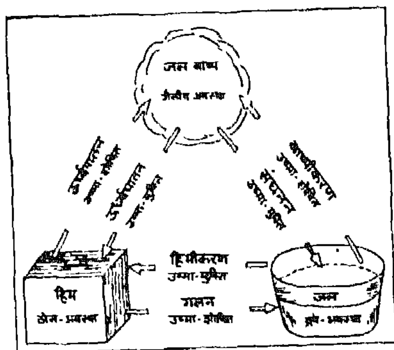
वाष्पीकरण प्रायः हर समय और हर तापमान पर होता रहता है। परन्तु वाष्पीकरण होने की दर हर समय समान नहीं होती। जब मौसम गर्म और शुष्क होता है और पवनें तेज चलती हैं तब वाष्पीकरण सबसे अधिक होता है, इसके विपरीत ठण्डे, आर्द्र तथा शांत मौसम में वाष्पीकरण सबसे कम होता है।

वायु में विद्यमान जलवाष्प की मात्रा को **आर्द्रता** कहते हैं। वायु की आर्द्रता का तापमान से गहरा सम्बन्ध है। तापमान के बढ़ने पर वायु की जलवाष्प धारण करने की क्षमता अधिक हो जाती है। इसके विपरीत तापमान घटने पर वायु की जलवाष्प रखने की क्षमता कम हो जाती है। जब तापमान और आर्द्रता दोनों ही अधिक होते हैं तो हमें बड़ी बेचैनी होती है। ऐसी दशा में पसीना जल्दी नहीं सूखता और हमारा शरीर गर्म तथा चिपचिपा हो जाता है। वायुमंडल की ऐसी दशाओं को हम प्रायः किस ऋतु में अनुभव करते हैं?

संघनन

वायु के एक निश्चित आयतन में किसी दिए हुए तापमान पर जलवाष्प धारण करने की एक निश्चित अधिकतम मात्रा होती है। वह उससे अधिक जलवाष्प नहीं धारण कर सकती। जब वायु अधिकतम जलवाष्प धारण कर लेती है, तो उस स्थिति में वायु को उस तापमान पर **संतृप्त** कहा जाता है, परन्तु जब वायु अपनी अधिकतम जलवाष्प धारण करने की मात्रा से कम जलवाष्प रखती है तो उस समय वायु को **असंतृप्त** कहा जाता है। तापमान के बढ़ने पर संतृप्त वायु असंतृप्त हो सकती है। असंतृप्त वायु भी ठंडी होने पर

संतृप्त हो सकती है। जिस तापमान पर वायु संतृप्त हो जाती है उसे **ओसांक** कहते हैं।



चित्र 6. वायुमंडल में जल की तीन अवस्थाएँ ध्यान से देखो कि वाष्पीकरण की प्रक्रिया में ऊष्मा इस्तेमाल होती है और जब संघनन होता है तो समान मात्रा की ऊष्मा छोड़ी जाती है। ऊर्ध्वपातन (सबलीमेशन) किसे कहते हैं?

जब संतृप्त वायु का तापमान ओसांक से नीचे चला जाता है तो अतिरिक्त जलवाष्प की मात्रा सूक्ष्म जल बिंदुओं या हिमकणों के रूप में बदल जाती है। वह प्रक्रिया जिसमें जलवाष्प सूक्ष्म जलकणों या हिमकणों में बदल जाती है, उसे संघनन कहते हैं। जलवाष्प बादल अथवा कोहरे के रूप में संघनित हो सकती है। संघनन की क्रिया तीव्र होने पर जलवाष्प वर्षा, फुहार, हिम, पाला या ओस का रूप धारण कर सकती है। वायुमंडल से जलवाष्प के वर्षा, हिम और ओले के रूप में धरातल पर गिरने को सामूहिक रूप से **वर्षण** कहा जाता है।

संघनन के रूप

बादल—वायुमंडल में जलवाष्प के संघनन द्वारा बादलों का निर्माण होता है। बादल उस समय बनते हैं जब आर्द्र वायु तीव्र वायु धाराओं के साथ ऊपर उठती है और ऊपर जाने के साथ-साथ ठंडी हो जाती है। ऊपर उठती हुई यह आर्द्र वायु जब ओसांक बिन्दु पर पहुँच जाती है तो इसमें मौजूद जलवाष्प बहुत ही सूक्ष्म जल बिन्दुओं या बर्फ के कणों में संघनित हो जाती है। ये सूक्ष्म जल-बिन्दु या बर्फ के कण वायु में उपस्थित धूल कणों पर चिपके रहते हैं। हवा में तैरते हुए या पवन के साथ उड़ते हुए ये असंख्य सूक्ष्म जलबिन्दु अथवा बर्फ के कण बादल कहलाते हैं।

कोहरा—कोहरा जल या स्थल की सतह पर या उसके पास बादलों की तरह छाया रहता है। वायुमंडल की निचली परतों के तापमान के ओसांक से नीचे गिर जाने पर **कोहरा** बनता है।

वर्षा—बादलों के ऊपर चढ़ने से या उनके वायुमंडल के ठंडे क्षेत्रों में पहुँचने से उनका तापमान गिर जाता है। उनमें मौजूद अत्यन्त सूक्ष्म जलबिन्दु अधिक ठंडे होकर एक-दूसरे के निकट आ जाते हैं और मिलकर बड़ी बूंद बनाते हैं। जब ये बून्दें इतनी बड़ी हो जाती हैं कि वायु में लटकी नहीं रह सकतीं, तब वे पृथ्वी की ओर गिरने लगती हैं। गिरते समय ये बून्दें मार्ग में अपने साथ छोटी-छोटी बून्दों को इकठ्ठा करती आती हैं। इस प्रकार बादलों से गिरने वाली जल की बून्दों को **वर्षा** कहते हैं। हमारे देश में वर्षा की मात्रा मिलिमीटर में मापी जाती है। जिस यंत्र द्वारा वर्षा मापी जाती है उसे **वर्षामापी** कहते हैं।

हिमपात—जब वायुमंडल में संघनन की प्रक्रिया हिमांक बिन्दु से नीचे होती है तो जलवाष्प असंख्य हिमकणों में बदल जाती है। जब ये कण आपस में मिलकर काफी बड़े हो जाते हैं तो उन्हें **हिमलव** कहते हैं। बादलों से हिमलवों का धरातल पर गिरना **हिमपात** कहलाता है।

ओला—कभी-कभी बादलों में ऊर्ध्वाधर तेज वायु धाराएँ चलती हैं और इन धाराओं के साथ वर्षा की बून्दें ऊपर वायुमंडल के अतिशीतल क्षेत्र में पहुँच जाती हैं। इन क्षेत्रों में तापमान प्रायः हिमांक बिन्दु से बहुत नीचे होता है। अतः ये बून्दें जम जाती हैं। जमी हुई बून्दें नीचे आते समय मार्ग में वर्षा की अन्य बून्दों का पानी ले लेती हैं और वायुधारा के साथ फिर ऊपर वायुमंडल के उन्हीं ठंडे भागों में पहुँच जाती हैं। वहाँ वे फिर से जम जाती हैं। वर्षा की जमी हुई बून्दों के नीचे गिरने और ऊपर जाकर फिर से जमने की प्रक्रिया लगातार होती रहती है। जब ये जमी हुई बून्दें इतनी बड़ी हो जाती हैं कि वायु धाराएँ अपने साथ उन्हें ऊपर उठाने में असमर्थ होतीं हैं तो वे धरातल पर ओले के रूप में गिरती हैं। यदि एक ओले को काटा जाए तो उसमें प्याज की तरह जल की जमी हुई कई परतें मिलेंगी।

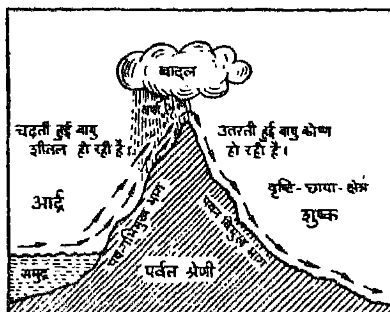
ओस—बादल रहित, ठंडी रातों में जब कोष्ण आर्द्र वायु अत्यन्त शीत धरातल के संपर्क में आती है तो उसकी आर्द्रता संघनित होकर **ओस** बनती

है। ओस के बनने में सूक्ष्म जलविन्दु बादल न बन कर सीधे धरातल पर ही संघनित हो जाते हैं।

पाला—जमी हुई ओस को **पाला** कहते हैं।

वर्षा के प्रकार

कोष्ण आर्द्र वायु के ऊपर उठने और ठंडा होने की क्रियाओं के अनुसार वर्षा तीन प्रकार से होती है—पर्वतकृत, संवहनीय और चक्रवातीय।

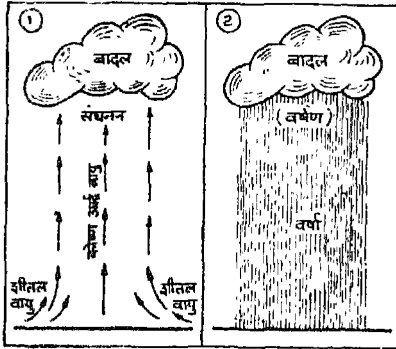


चित्र 7. पर्वतकृत वर्षा

चित्र में देखो कि पर्वत के पवनाभिमुखा ढाल पर भारी वर्षा होती है और इसके पवन विमुख ढाल पर बहुत हल्की वर्षा होती है। ऐसा क्यों है?

पर्वतकृत वर्षा—जब आर्द्रता से लदी पवनों के मार्ग में उच्च-भूभाग या पर्वत आ जाते हैं, तो पवनें ऊपर उठना शुरू कर देती हैं। ऊपर उठती पवन फैलती है और उसके फैलने से वायु ठण्डी होकर संतृप्त हो जाती है। वायु के और ऊपर जाने पर वर्षा होती है। इस प्रकार की वर्षा को **पर्वतकृत वर्षा** कहते हैं। पर्वत के जिस ओर का भाग पवनों के सामने पड़ता है उसे **पवनाभिमुखा ढाल** कहते हैं। आर्द्र पवनें ऊपर उठते समय पवनाभिमुखा ढाल पर भारी वर्षा करती हैं। इसके विपरीत पर्वत के दूसरी ओर का भाग **पवनाविमुखा ढाल** कहलाता है। पवन विमुख ढाल पर पवनें नीचे उतरती हैं और गर्म होने लगती हैं। अतः इस भाग पर पवनों में आर्द्रता धारण करने की क्षमता बढ़ जाती है। इसीलिए इनसे बहुत ही कम वर्षा होती है। इन कम वर्षा वाले क्षेत्रों को **वृष्टि छाया क्षेत्र** कहते हैं। देश के पर्वतीय भागों में प्रायः पर्वतकृत वर्षा होती है। उदाहरण के लिए भारत में पश्चिमी घाट के पवनाभिमुख ढालों पर ग्रीष्म ऋतु में दक्षिण-पश्चिम मानसून से भारी वर्षा होती है। परन्तु इन्हीं पवनों से पश्चिमी घाट के पूर्वी ढलानों पर बहुत कम वर्षा होने

है। इससे यह स्पष्ट होता है कि महाबलेश्वर में पूना की अपेक्षा अधिक वर्षा क्यों होती है ?



चित्र 8. संवहनीय वर्षा

चित्र में देखो कि ऊपर उठती हुई गर्म आर्द्र वायु बादलों का निर्माण करती है। ये बादल बिजली की चमक और गरज के साथ भारी वर्षा करते हैं। संसार के किन भागों में संवहनीय वर्षा होती है ?

संवहनीय वर्षा—जब सूर्यातप से धरातल गर्म हो जाता है तो धरातल के निकट की वायु गर्म होकर ऊपर उठना शुरू कर देती है, जिससे संवहनीय वायु धाराएँ उत्पन्न हो जाती हैं। वायु में पर्याप्त आर्द्रता होने पर ये ठंडी होकर संघनित होती हैं और बादलों का निर्माण होता है। इनसे भारी वर्षा होती है। इस प्रकार की वर्षा को संवहनीय वर्षा कहते हैं। तुम जानते हो कि मध्य अफ्रीका के विषुवतीय क्षेत्र में बादलों की गरज और बिजली की चमक के साथ भारी मात्रा में संवहनीय वर्षा होती है। भारत में भी ग्रीष्म ऋतु में प्रायः इस प्रकार की वर्षा होती है।

चक्रवातीय वर्षा—तुम जानते हो कि चक्रवात में पवनें बड़ी तेजी से निम्न दाब केन्द्र की ओर चलती हैं और इसके परिणामस्वरूप केन्द्र के आस-पास तेज गति वाला चक्र बन जाता है। इस चक्र में वायु बाहर जाने का मार्ग न पाकर ऊपर उठने लगती है। इस प्रकार गर्म आर्द्र वायु के अचानक ऊपर उठ जाने से वर्षा होती है। इस प्रकार की वर्षा को **चक्रवातीय वर्षा** कहते हैं। चक्रवातीय वर्षा के लिए वायु में आर्द्रता होना आवश्यक है, अन्यथा वर्षा नहीं होगी।

नवीन पारिभाषिक शब्द जो तुमने इस पाठ में पढ़े : वर्षण—वायुमंडल द्वारा वर्षा, हिमपात तथा ओलों के रूप में धरातल की ओर छोड़ी गई आर्द्रता। **पर्वतकृतवर्षा**—वह वर्षा जो मुख्यत: वर्षा-वहन पवनों के मार्ग में उच्च भू-भाग या प्रर्वतों के आ जाने से होती है।

स्वाध्याय

पुनर्विचार

1. निम्नलिखित प्रश्नों के संक्षिप्त उत्तर दो :
   - (क) "जलवाष्प वायुमंडल की अन्य गैसों से भिन्न है" इसके कोई दो प्रमाण दो।
   - (ख) वायुमंडल की आर्द्रता हमारे लिए क्यों महत्वपूर्ण है ?
   - (ग) वाष्पीकरण को प्रभावित करने वाले तीन प्रमुख कारक कौन-कौन से हैं ?
   - (घ) जब आर्द्रता और तापमान दोनों ही अधिक होते हैं तो हम बेचैनी का अनुभव क्यों करते हैं ?
2. अन्तर स्पष्ट करो :
   - (क) पवनाभिमुख और पवन विमुख ढाल।
   - (ख) संघनन और वाष्पीकरण।
3. नीचे दिए कुछ कथन सही हैं और कुछ गलत। सही कथनों को रेखांकित करो और गलत कथनों को सही करके लिखो :
   - (क) वाष्पीकरण हर समय होता रहता है।
   - (ख) ओसांक वह तापमान है जिस पर जलवाष्प जल के रूप में संघनित होने लगती है।
   - (ग) धूलकण बादलों के निर्माण में सहायक होते हैं।

(घ) वायु के ठंडा होने पर उसकी आर्द्रता धारण करने की क्षमता बढ़ जाती है।

(ङ) वाष्पीकरण की प्रक्रिया में ऊष्मा छोड़ी जाती है।

4. निम्नलिखित प्रत्येक के लिए एक पारिभाषिक शब्द दो :

(क) वर्षा मापने वाला एक यंत्र।

(ख) वायु में जलवाष्प की मात्रा।

(ग) अपनी पूर्ण क्षमता तक आर्द्रता धारण की हुई वायु।

5. चित्र की सहायता से पर्वतकृत वर्षा तथा संवहनीय वर्षा के होने के कारणों को स्पष्ट करो।

मानचित्र-कार्य

6. भारत के रेखा-मानचित्र में सबसे अधिक वर्षा तथा सबसे कम वर्षा वाले क्षेत्रों को दिखाओ।

कक्षा-कार्य तथा विचार-विमर्श

7. "मानसूनी बादलों की महिमा"

वर्षा ऋतु में विभिन्न प्रकार के बादल दिखाई देते हैं। इन बादलों के विषय में जानकारी प्राप्त करो और उनके चित्र एकत्र करो। इसके बाद कक्षा में विचार-विमर्श करो कि ये बादल किस प्रकार के दृश्य उत्पन्न करते हैं। छात्र कुछ बादलों के नाम और उनकी विशेषताएँ भी बता सकते हैं।

4

महासागरों का जल और उसका परिसंचरण

> **पारिभाषिक शब्द जो तुम जानते हो : जलमंडल**—पृथ्वी की सतह पर समुद्रों, झीलों, नदियों और हिम तथा बर्फ के रूप में पाये जाने वाले जल का सामूहिक नाम। **प्लावीहिमशैल**—समुद्र में तरता हुआ बर्फ का एक बड़ा खंड।

पृथ्वी को 'जलीय ग्रह' भी कहते हैं। सौरमंडल में केवल पृथ्वी ही ऐसा ग्रह है जिस पर प्रचुर मात्रा में जल मिलता है। जल और हवा के ही कारण केवल हमारे ग्रह पर विभिन्न प्रकार का जीवन मिलता है। तुम जानते हो कि पृथ्वी की सतह का दो-तिहाई से भी अधिक भाग जल से ढका है। पृथ्वी पर उपलब्ध सारे जल का 97 प्रतिशत जल महासागरों में है और यह खारा है। शेष 3 प्रतिशत जल मीठा है जो धरातल पर हिम और बर्फ के रूप में तथा झीलों और नदियों में मिलता है।

महासागरों का जल हमेशा खारा होता है। इसलिए मनुष्य द्वारा इसका सीधा उपयोग बहुत कम है। परन्तु वायुमंडल को अधिकांश जलवाष्प प्रदान करने और वहाँ से मीठे जल के रूप में वर्षण द्वारा धरातल पर आने में महासागरों का महत्व बहुत अधिक है।

महासागरों के जल की गतियाँ

सागर तथा महासागरों का जल कभी भी स्थिर नहीं रहता। उसमें हमेशा ही कुछ न कुछ उथल-पुथल होती रहती है। महासागर के जल में तीन प्रकार की गतियाँ होती हैं—तरंगें, ज्वारभाटा और धाराएँ।

तरंगें—तरंगों में समुद्र की सतह का जल ऊपर-नीचे होता रहता है। जल के कण मुख्यत: ऊपर-नीचे गति करते हैं और अपने आसपास के जल कणों को इसी प्रकार गतिशील बना देते हैं। तरंगों का निर्माण पवनों की गति के कारण होता है। तूफान के समय तरंगें प्राय: बहुत ऊँची-ऊँची उठती हैं और वे बहुत ही विनाशकारी होती हैं।

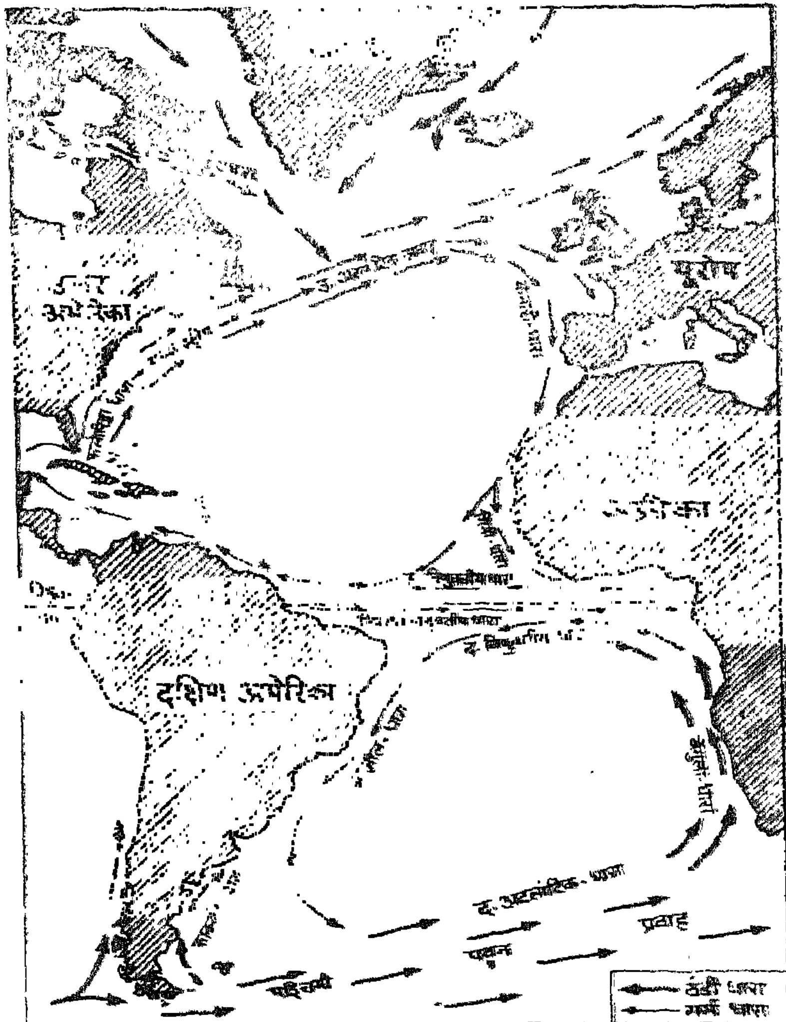
ज्वारभाटा—समुद्र के निकट रहने वाले लोग जानते हैं कि समुद्र का जल प्रतिदिन नियमित समय के अंतर पर प्राय: दो बार चढ़ता है और दो बार उतरता है। तट के आसपास कुछ घंटों तक समुद्र का जल लगातार चढ़ता चला जाता है और कुछ ऊँचाई पर ठहर कर यह जल धीरे-धीरे उतरने लगता है। समुद्र जल के इसी चढ़ाव-उतार को **ज्वारभाटा** कहते हैं। समुद्र तल से चढ़ते हुए जल को **ज्वार** या **चढ़ता ज्वार** और उतरते हुए जल को **भाटा** या **उतरता ज्वार** कहते हैं। समुद्र के जल की सतह का नियमित समय के अंतर पर चढ़ना व उतरना मुख्यत: चंद्रमा के आकर्षण के कारण होता है। सूर्य का आकर्षण भी कुछ सीमा तक इसको प्रभावित करता है।

ज्वारभाटे से हमें व्यापार, मत्स्यग्रहण एवं नौसंचालन में बहुत मदद मिलती है। चढ़ते ज्वार के समय तट के पास पानी की गहराई बढ़ जाती है। इससे बड़े-बड़े जहाज पोताश्रय तक आसानी से पहुँच सकते हैं और सुरक्षापूर्वक पोताश्रय छोड़ सकते हैं। ज्वारभाटे नदियों द्वारा लाई गाद को हटा कर तट को साफ रखते हैं और पोताश्रय को उथला होने से बचाते हैं।

ज्वारीय जल के कारण ही बहुत सी नदियाँ नौसंचालन के लिए उपयुक्त हो सकी हैं। उदाहरण के लिए हुगली नदी पर स्थित कलकत्ता पत्तन का महत्व ज्वारभाटे के ही कारण है। ज्वारभाटे के समय की सूचना समाचारपत्रों और नाविक कैलेंडरों में प्रकाशित की जाती है। ये कैलेंडर नौसंचालकों के लिए क्यों महत्वपूर्ण हैं?

महासागर-धाराएँ

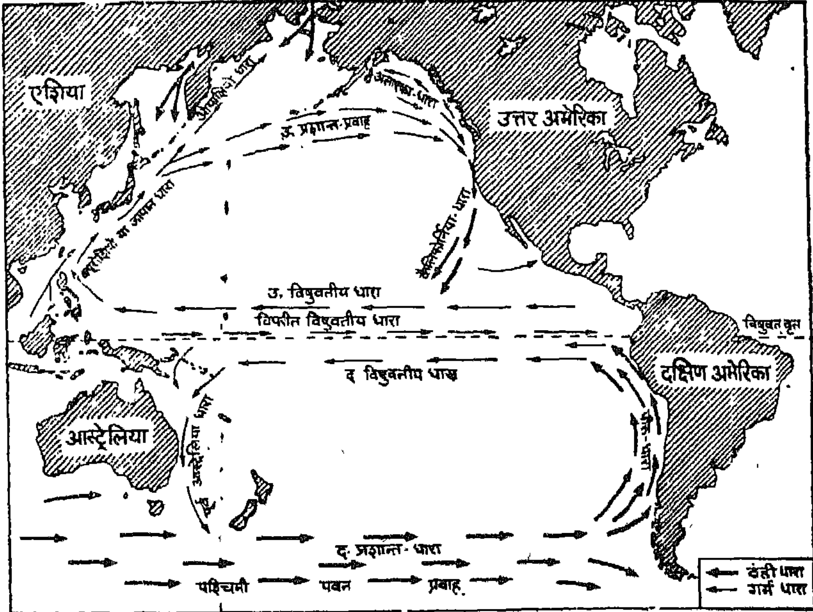
महासागरों का जल एक भाग से दूसरे भाग की ओर बड़ी-बड़ी सरिताओं के रूप में बहता है। महासागरों की सतह पर नियमित रूप से एक निश्चित दिशा में बहने वाली इन जल-सरिताओं को **महासागर-धाराएँ** कहते हैं। ये धाराएँ जल की बड़ी भारी मात्रा को इधर से उधर ले जाती हैं। जल की यह



चित्र 9. अटलांटिक महासागर की धाराएं

उत्तर अटलांटिक महासागर की धाराओं की तुलना दक्षिण अटलांटिक महासागर की धाराओं से करो। इनकी दिशाओं में तुम क्या अन्तर देखते हो ?

गति सकरी तेज धारा के रूप में अथवा मंद बहने वाले चौड़े प्रवाह के रूप में होती है। धाराओं की गति 2 किलोमीटर से लेकर 10 किलोमीटर प्रति घंटा तक हो सकती है। प्रवाह की गति मंद होती है। यह 1 किलोमीटर से लेकर 3 किलोमीटर प्रतिदिन हो सकती है।



चित्र 10. प्रशांत महासागर की धाराएँ

मानचित्र में देखो, कि उत्तर प्रशान्त महासागर और दक्षिण प्रशान्त महासागर की धाराएँ वृत्ताकार बह रही हैं। क्यूरोशियो-धारा की तुलना गल्फ स्ट्रीम से करो।

महासागर-धाराएँ दो प्रकार की होती हैं—गर्म तथा ठण्डी। गर्म धाराओं का जल वास्तव में बहुत गर्म नहीं होता। उनका तापमान आसपास के जल के तापमान से कुछ अधिक होता है। इसी प्रकार ठण्डी धाराओं के जल का तापमान आसपास के जल के तापमान से कुछ कम होता है।

अटलांटिक और प्रशांत महासागरों की प्रमुख धाराओं को प्रदर्शित करने वाले मानचित्रों को देखो। प्रत्येक महासागर की गर्म और ठण्डी धाराओं की अलग-अलग सूचियाँ बनाओ। मानचित्रों से प्रत्येक धारा की दिशा भी ज्ञात करो। उत्तरी गोलार्ध में धाराओं के बहने की सामान्य दिशा बायें से दायें और दक्षिणी गोलार्ध में दायें से बायें बहती हैं। इसके अतिरिक्त गर्म धाराएँ निम्न अक्षांशों से उच्च अक्षांशों की ओर बहती हैं। दूसरी ओर ठण्डी धाराएँ उच्च अक्षांशों से निम्न अक्षांशों की ओर बहती हैं। इस प्रकार महासागरों के जल में सामान्य परिसंचरण होता रहता है।

धाराएँ मुख्यतः नियमित रूप से चलने वाली भू-मंडलीय पवनों के कारण बनती हैं। तापमान में भिन्नता और समुद्रों का खारापन भी धाराओं के उत्पन्न होने में सहायक होता है। अनेक धाराओं के मार्ग में महाद्वीपों और बड़े-बड़े द्वीपों के आने के कारण उनकी दिशा बदल जाती है।

महासागर-धाराओं का प्रभाव

तुमने पढ़ा है कि महासागर-धाराओं का प्रभाव पास के तटवर्ती क्षेत्रों तथा द्वीपों की जलवायु पर विशेष रूप से पड़ता है। गर्म धाराएँ अपने आस-पास के क्षेत्रों का तापमान बढ़ाती हैं और ठण्डी धाराओं के कारण निकटवर्ती भागों का तापमान गिरता है। उदाहरणार्थ क्यूरोशियो गर्म धारा के कारण दक्षिणी जापान की सर्दियाँ अधिक ठण्डी और अधिक लम्बी नहीं होने पातीं। इसके विपरीत ओयाशियो ठण्डी धारा के कारण उत्तरी जापान की सर्दियाँ बहुत ठण्डी और लम्बी होती हैं।

गर्म धाराओं के ऊपर से गुजरने वाली पवनें पर्याप्त मात्रा में आर्द्रता ग्रहण कर लेती हैं और तटवर्ती क्षेत्रों में भारी वर्षा करती हैं। दूसरी ओर ठण्डी धाराओं के ऊपर से बहने वाली पवनें शुष्क और ठण्डी हो जाती हैं। अतः इन पवनों से तटवर्ती भागों पर बहुत ही कम वर्षा होती है। इसीलिए संसार के अधिकांश गर्म मरुस्थल उन तटों पर या उनके पास स्थित हैं जहाँ ठण्डी धाराएँ बहती हैं। क्या तुम इसका कोई उदाहरण दे सकते हो ?

जिन स्थानों पर ठण्डी और गर्म धाराएँ मिलती हैं वहाँ प्रायः सघन कोहरा बनता है। मानचित्र से मालूम करो कि गर्म और ठण्डी धाराएँ संसार के किन-

किन भागों में मिलती हैं ? ऐसा एक स्थान उत्तर अमेरीका में न्यूफाउंडलैंड के पास है। यहाँ गर्म गल्फ स्ट्रीम की धारा ठण्डी लेब्रेडोर की धारा से मिलती है।

धाराओं का प्रभाव नौसंचालन पर भी पड़ता है। जो जहाज धाराओं के प्रवाह के साथ चलते हैं उनकी गति स्वतः बढ़ जाती है। दूसरी ओर धाराओं की गति के प्रतिकूल चलने वाले जहाजों की गति कुछ मंद पड़ जाती है। नाविक धाराओं के साथ चलना पसंद करते हैं क्योंकि इससे समय और ईंधन की भी बचत होती है। गर्म धाराएँ प्लावी हिमशैलों को पिघलाने में सहायक होती हैं और इस प्रकार नौसंचालन को एक भारी बाधा से सुरक्षित रखती हैं। गर्म धाराएँ ध्रुवीय क्षेत्रों के पत्तनों को शीत ऋतु में भी नहीं जमने देतीं। उदाहरणार्थ उत्तर अटलांटिक प्रवाह के गर्म होने के कारण आर्कटिक वृत्त के भीतर स्थित नार्वे का तट जाड़ों में भी नहीं जमने पाता। इसके विपरीत लेब्रेडोर का तट जो नार्वे के तट की तुलना में निम्न अक्षांशों पर स्थित है ठण्डी लेब्रेडोर धारा के कारण शीत ऋतु में जम जाता है।

नवीन पारिभाषिक शब्द जो तुमने इस पाठ में पढ़े : ज्वारभाटा—समुद्र में जल की सतह का नियमित समय के अंतर पर प्रतिदिन प्रायः दो बार चढ़ना व उतरना। **महासागर धाराएँ**—महासागरों की सतह पर नियमित रूप से एक निश्चित दिशा में बहने वाली जल-सरिताएँ।

स्वाध्याय

पुनर्विचार

1. निम्नलिखित प्रश्नों के संक्षिप्त उत्तर दो :

(क) लाल सागर बाल्टिक सागर की तुलना में अधिक खारा क्यों है ?

(ख) महासागर की तीन प्रकार की गतियों के नाम बताओ।

(ग) ज्वारभाटे से दो प्रमुख लाभ बताओ।

(घ) कौन-सी दो धाराएँ जापान की जलवायु को प्रभावित करती हैं ?

2. अन्तर स्पष्ट करो :

(क) गर्म धारा तथा ठण्डी धारा ।

(ख) तरंगें तथा ज्वारभाटा ।

(ग) महासागर-धारा तथा महासागर-प्रवाह ।

3. नीचे दिए प्रत्येक के लिए एक पारिभाषिक शब्द दो :

(क) महासागरों की सतह पर जल की वह गति जिसमें जलकण केवल ऊपर-नीचे गतिमान होते हैं ।

(ख) समुद्र के जल का एक दिन में प्रायः दो बार चढ़ना व उतरना ।

(ग) महासागरों की सतह पर नियमित रूप से एक निश्चित दिशा में बहने वाली जल सरिताएँ ।

4. महासागर धाराएँ किसे कहते हैं ? उनकी उत्पत्ति किस प्रकार होती हैं ? महासागर-धाराएँ जलवायु को किस प्रकार प्रभावित करती हैं, इसे उदाहरण देकर स्पष्ट करो ।

मानचित्र-कार्य

5. संसार के एक रेखा-मानचित्र पर एटलस की सहायता से अटलांटिक या प्रशान्त महासागर की धाराओं को दिखाओ । दूसरे मानचित्र पर भू-मंडलीय पवनों को दिखाओ । दोनों मानचित्रों की तुलना करके बताओ कि धाराओं और पवनों की दिशा के सम्बन्ध में तुम किस निष्कर्ष पर पहुँचे ।

विचार-विमर्श

6. "यदि धाराएँ तथा ज्वारभाटे न होते"

छात्रों को इस विषय पर विचार करने के लिए प्रोत्साहित किया जाय और इसके बाद कक्षा को बताया जाए कि यदि धाराएँ तथा ज्वारभाटे न होते तो इसके क्या परिणाम होते । विचार करते समय इन मुख्य बातों पर विशेष बल दिया जाए—जलवायु, नदी-पत्तन, मछली पकड़ना, नौसंचालन आदि पर प्रभाव ।

खंड दो

आस्ट्रेलेशिया

आस्ट्रेलिया और न्यूजीलैंड पूर्णतया दक्षिणी गोलार्द्ध में आते हैं। इन देशों तथा निकटवर्ती द्वीपों को मिलाकर आस्ट्रेलेशिया कहा जाता है।

आस्ट्रेलिया प्यासी भूमि का देश है। यह देश निम्न उच्चावच, विस्तृत मरुस्थलों और विविध प्रकार की जलवायु के लिए जाना जाता है। दूसरी ओर न्यूजीलैंड में पर्याप्त वर्षा होती है और यहाँ की जलवायु मृदुल तथा शीतल है। यह सुन्दर वनों और हरे-भरे चरागाहों का देश है। आस्ट्रेलिया तथा न्यूजीलैंड के जीव-जंतु तथा पेड़-पौधे संसार के अन्य क्षेत्रों से कई बातों में भिन्न हैं।

आस्ट्रेलिया तथा न्यूजीलैंड नए आबाद देश हैं क्योंकि इनकी खोज हाल ही में हुई है। इन देशों में जनसंख्या का औसत घनत्व बहुत कम है। यहाँ के लोगों ने पशुचारणिक उद्योगों का विकास आधुनिक वैज्ञानिक तरीकों से किया है। इन्हीं कारणों से ये देश समृद्ध हैं और यहाँ के लोगों का जीवन-स्तर ऊँचा है।

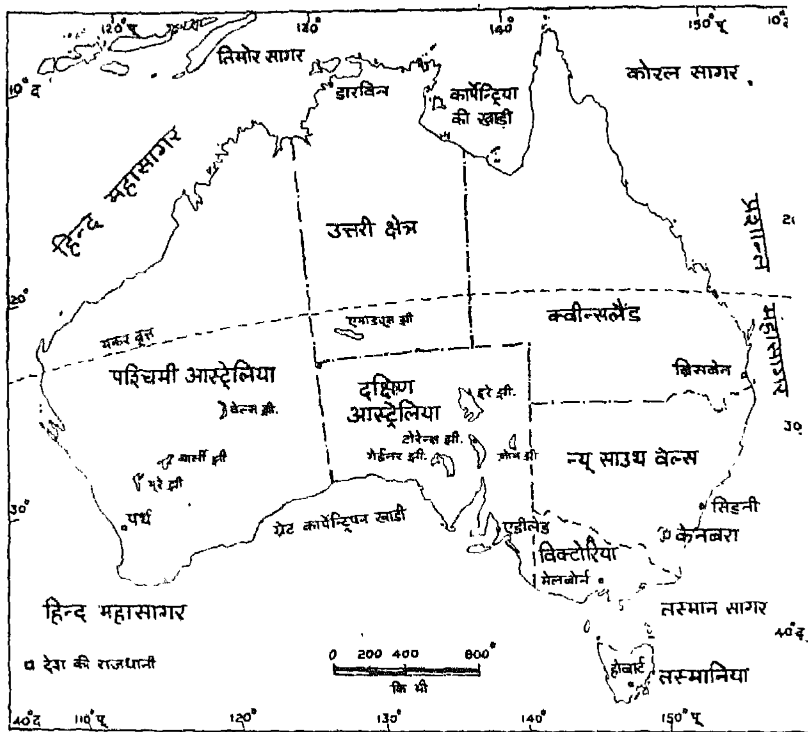
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आस्ट्रेलिया

पारिभाषिक शब्द जो तुम जानते हो : अंतःस्थलीय जलनिकास—वह नदी-तंत्र जिसका पानी समुद्र में नहीं पहुँचता। पशुचारणिक खेती—दूध, मांस, ऊन तथा खाल प्राप्त करने के लिए घास खाने वाले जानवरों का प्रजनन तथा पालन।

आस्ट्रेलिया संसार का सबसे छोटा महाद्वीप है। इसीलिए इसे प्रायःद्वीपीय महाद्वीप कहते हैं। इसका क्षेत्रफल भारत के क्षेत्रफल के दुगने से अधिक है। यह पूर्णतया विषुवत वृत्त के दक्षिण में स्थित है। विलियम जौन्सजन सर्वप्रथम यूरोपियन थे जो सन 1606 में आस्ट्रेलिया पहुँचे थे। परन्तु इसकी वास्तविक खोज का श्रेय अंग्रेज नाविक कैप्टन जेम्स कुक को जाता है जो सन् 1770 में यहाँ पहुँचे थे।

चित्र 11 को देखो, तुम पाओगे कि आस्ट्रेलिया एशिया के दक्षिण-पूर्व में स्थित है। इसी मानचित्र से तुम्हें ज्ञात होगा कि आस्ट्रेलिया किन अक्षांशों और देशान्तरों के बीच स्थित है। यह देश छः स्वशासी राज्यों तथा दो केन्द्र प्रशासित क्षेत्रों में बँटा हुआ है। आस्ट्रेलिया का सबसे बड़ा राज्य कौन-सा है? दो केन्द्र प्रशासित क्षेत्रों के नाम बताओ। द्विपीय राज्य कौन-सा है? आस्ट्रेलिया



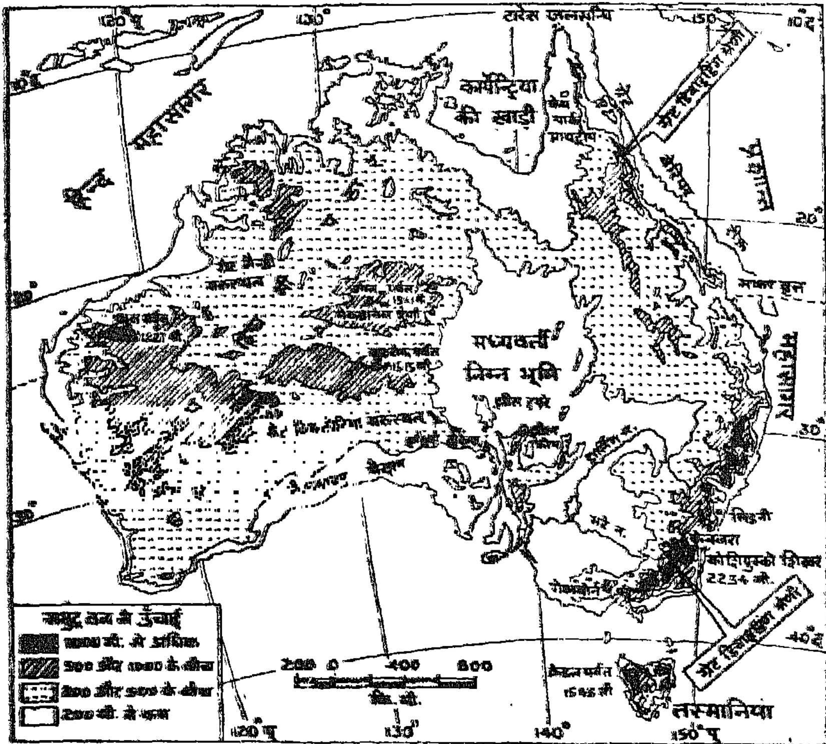
चित्र 11. आस्ट्रेलिया—राजनीतिक भाग

मानचित्र में देखो कि आस्ट्रेलिया के अधिकांश राज्यों की सीमाएँ सीधी रेखाओं के रूप में हैं। क्या तुम इसका कारण बता सकते हो?

की राजधानी बताओ। मानचित्र से प्रत्येक राज्य की राजधानी का नाम ज्ञात करो।

भौतिक लक्षण

आस्ट्रेलिया को हम तीन मुख्य भौतिक भागों में बाँट सकते हैं—पश्चिमी पठार, मध्यवर्ती निम्न भूमि तथा पूर्वी उच्च भूमि।

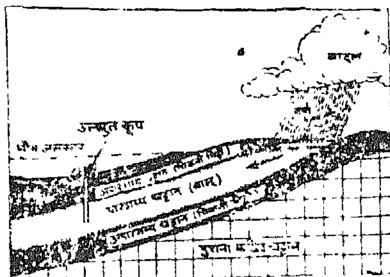


चित्र 12. आस्ट्रेलिया के भौतिक लक्षण

मानचित्र को देखो कि आस्ट्रेलिया का धरातल अन्य महाद्वीपों की अपेक्षा अधिक समतल है। तुम आस्ट्रेलिया के किस भाग को कृषि के लिए अधिक उपयुक्त समझते हो?

पश्चिमी पठार—आस्ट्रेलिया का पश्चिमी भाग एक विस्तृत पठार है। यह महाद्वीप के लगभग दो-तिहाई भाग पर फैला है। कुछ स्थानों पर सामान्य धरातल से ऊपर उठी हुई एकाकी पर्वत-श्रेणियाँ हैं। पठार का बहुत-सा भाग मरुस्थल है।

मध्यवर्ती निम्न भूमि—पश्चिमी पठार और पूर्वी उच्च भूमि के बीच निम्न भूमि क्षेत्र की एक बड़ी पेटी है। इस क्षेत्र की सामान्य ऊँचाई 150 मीटर से भी कम है। आयर झील के आसपास का क्षेत्र तो समुद्रतल से 12 मीटर नीचे है। आयर झील के चारों ओर का भाग अंतःस्थलीय जलनिकास का क्षेत्र है। मर्रे और डार्लिंग आस्ट्रेलिया की प्रमुख नदियाँ हैं। ये दोनों मध्यवर्ती निम्न भूमि के दक्षिणी भाग में से होकर बहती हैं।



चित्र 13. उत्स्रुत कूप

चित्र में देखो कि वर्षा का जल पारगम्य शैलों द्वारा रिस-रिस कर जमीन के अन्दर जाता है। वहाँ वह दो अपारगम्य शैल-परतों के बीच गहरी द्रोणियों में इकट्ठा हो जाता है। धरातल पर यह जल उत्स्रुत कूपों द्वारा क्यों लगातार बड़े बेग से निकलता रहता है?

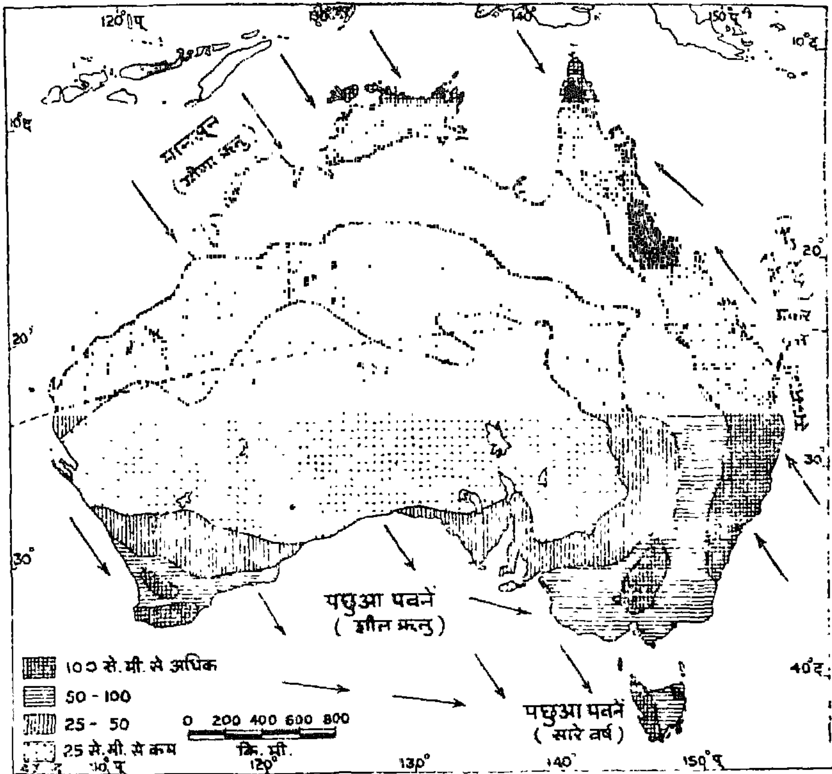
वर्षा की कमी के कारण निम्न भूमि का अधिक भाग अति शुष्क है। कुछ जल उत्स्रुत कूपों से मिल जाता है। ये कुएँ बहुत गहरे खोदे जाते हैं। इन गहरे कूपों से पानी निरन्तर बड़े वेग से बाहर निकलता रहता है।

पूर्वी उच्च भूमि—पूर्वी उच्च भूमि आस्ट्रेलिया के पूर्वी तट के लगभग समान्तर फैली है। यह ऊँचे-ऊँचे पठारों की लम्बी पेटी है जिसे ग्रेट डिवाइडिंग रेंज कहते हैं। यह श्रेणी दक्षिण में सकरी एवं ऊँची है। यहाँ का कोशियुस्को पर्वत शिखर समुद्र तल से 2234 मीटर ऊँचा है और यह आस्ट्रेलिया का सबसे ऊँचा पर्वत-शिखर है। इस भाग के कुछ पर्वत-शिखर शीत ऋतु में बर्फ से ढके रहते हैं।

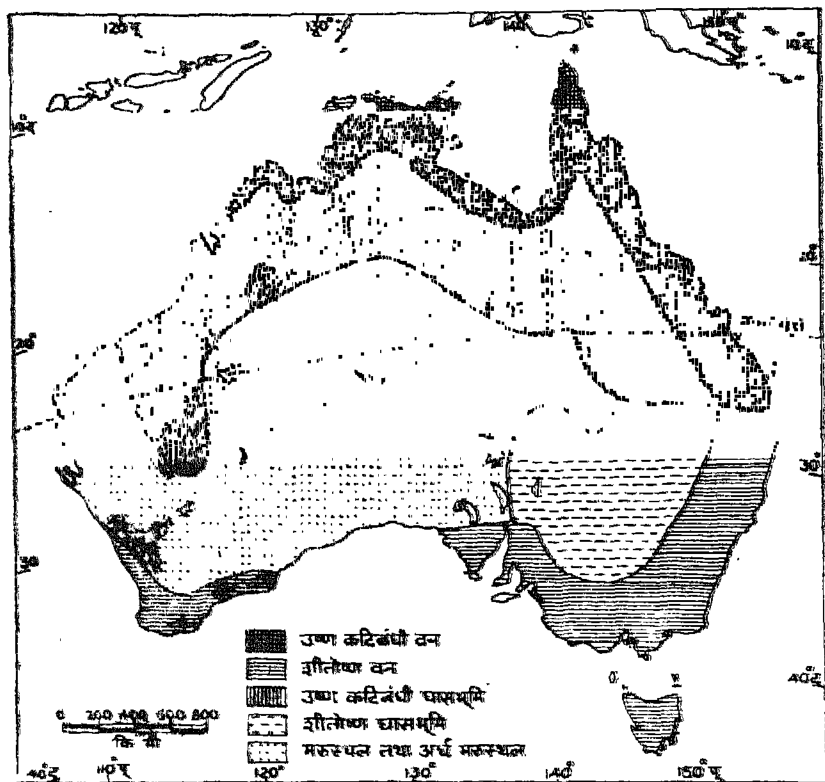
आस्ट्रेलिया के उत्तर-पूर्वी तट के पास एक बहुत लम्बी कटक के समान प्राकृतिक रचना है जिसे ग्रेट बैरियर रीफ कहते हैं। इस संसार प्रसिद्ध कटक की लंबाई 1900 किलोमीटर से भी अधिक है। तट से इसकी दूरी 38 से 240 किलोमीटर तक है। इस कटक का निर्माण प्रवाल नाम के सूक्ष्म जीवों के अस्थि पंजरों के लगातार जमाव से हुआ है।

जलवायु

दक्षिणी गोलार्द्ध में स्थित होने के कारण आस्ट्रेलिया की ऋतुएँ उत्तरी गोलार्द्ध की ऋतुओं के विपरीत होती हैं। आस्ट्रेलिया का अधिकतर भाग संमार्गी पवनों की पेटी में आता है। ये पवनें प्रशान्त महासागर को पार करती हुई पूरे साल दक्षिण-पूर्व से चलती रहती हैं। आस्ट्रेलिया के पूर्वी तट पर इन पवनों से भारी वर्षा होती है। वर्षा करने वाली इन संमार्गी पवनों के लिए पूर्वी उच्च भूमि



चित्र 14 (अ). आस्ट्रेलिया—वार्षिक वर्षा
आस्ट्रेलिया के पूर्वी तट पर वर्ष भर भारी वर्षा क्यों होती है ?



चित्र 14 (ब). आस्ट्रेलिया—प्राकृतिक वनस्पति

मानचित्र देखकर प्राकृतिक वनस्पति के संबंध में ज्ञात करो।

एक बहुत बड़ी रुकावट है। इसीलिए पश्चिम की ओर वर्षा बहुत कम होती जाती है। आस्ट्रेलिया के मध्यवर्ती तथा पश्चिमी भागों के बहुत बड़े क्षेत्र पर वर्षा बहुत ही कम या बिलकुल नहीं होती। इसीलिए यहाँ के एक बड़े आंतरिक

भाग की जलवायु गर्म मरुस्थलीय है। आस्ट्रेलिया के दक्षिणी-पश्चिमी तट की जलवायु भूमध्य सागरीय है। तस्मानिया द्वीप में पूरे वर्ष पछुआ पवनों से वर्षा होती है। आस्ट्रेलिया का उत्तरी भाग ग्रीष्म ऋतु में मानसून पवनों से वर्षा प्राप्त करता है।

वनस्पति एवं जीव-जन्तु

ऐसा विश्वास किया जाता है कि आस्ट्रेलिया महाद्वीप बहुत लम्बे समय तक संसार के अन्य भू-भागों से अलग रहा। इस कारण आस्ट्रेलिया की वनस्पति तथा जीव-जन्तु संसार के अन्य भागों की वनस्पति तथा जीव-जन्तुओं से भिन्न हैं।

आस्ट्रेलिया के सबसे सामान्य वृक्ष यूकेलिप्टस किस्म के हैं। ये सदाहरित वृक्ष हैं और इसे प्रायः गम (गोंद) वृक्ष के नाम से पुकारते हैं। यूकेलिप्टस वृक्ष की कुछ किस्में 90 मीटर तक ऊँची होती हैं और कुछ आदमी की ऊँचाई के बराबर होती हैं। 'जार्रा' और 'कारी' यूकेलिप्टस की ही कुछ किस्में हैं और इनसे मूल्यवान इमारती लकड़ी मिलती है। 'जार्रा' संसार की कठोरतम लकड़ी में गिना जाता है और इसका उपयोग रेल के 'स्लीपर' बनाने में होता है। 'वंटल' आस्ट्रेलिया का दूसरा सामान्य वृक्ष है। यह वृक्ष भी काफी ऊँचा होता है और ग्रीष्म ऋतु में इस पर पीले फूल आते हैं।

आस्ट्रेलिया की वर्षा और वनस्पति दिखाने वाले मानचित्रों का अध्ययन करो। तुम देखोगे कि यहाँ वर्षा की मात्रा प्राकृतिक वनस्पति के वितरण को नियंत्रित करती है। तट के निकट बहुत वर्षा वाले क्षेत्रों में वन मिलते हैं। शुष्क भीतरी भाग में घास भूमि तथा गुल्म भूमि मिलती है।

आस्ट्रेलिया के अनेक जन्तु मार्सूपियल अथवा धानी-प्राणी वर्ग के हैं। इन जानवरों के पेट के पास थैली जैसा खोल होता है जिसमें वे अपने बच्चे को आसानी से उठाए फिरते हैं। कंगारू तथा बेल्लाबी धानी-प्राणी वर्ग के प्रमुख जानवर हैं। कंगारू आस्ट्रेलिया का प्रतीक बन गया है। यह घास और पेड़ों की पत्तियाँ खाकर जीवित रहता है।

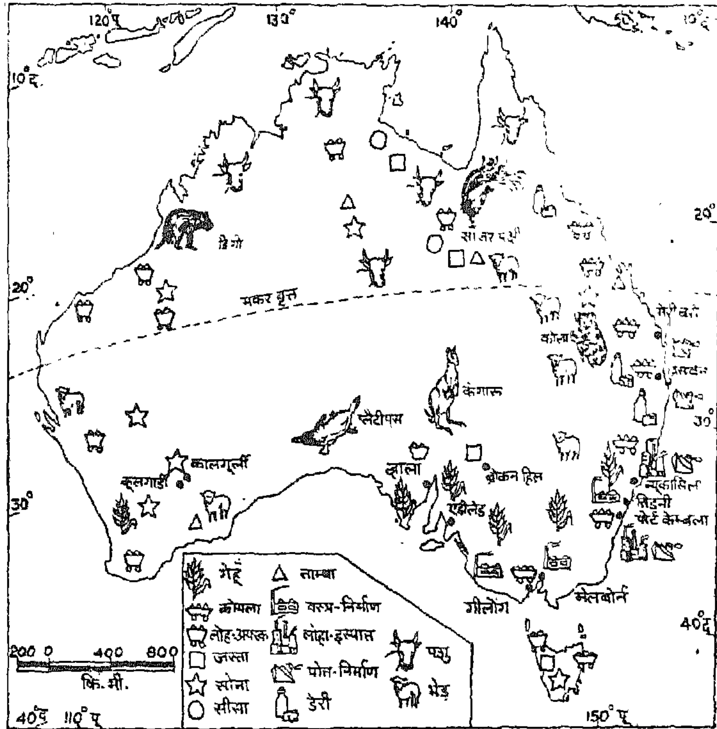


फोटो I. कंगारू-दौड़ते हुए

आस्ट्रेलिया कंगारू के लिए संसार प्रसिद्ध है। यह विचित्र जानवर आदमी से दूर भागता है। कंगारू छलांगें लगाकर चलता है और इसका खड़ा होना वास्तव में बैठ जाना है। इसे धानी-प्राणी पशु क्यों कहा जाता है?

आस्ट्रेलिया का दूसरा प्रमुख जानवर कोला है। अपनी चपटी, चौड़ी और काली नाक के कारण यह खिलौने वाले भालू जैसा ही दिखाई पड़ता है। कोला पेड़ों पर ही रहता है और यूकेलिप्टस वृक्ष की पत्तियाँ खाता है। यह रात को जागता है और दिन के समय ऊँघता या सोता रहता है। यह भी धानी-प्राणी वर्ग का जानवर है। यहाँ डिंगो नामक एक जंगली कुत्ता भी पाया जाता है। प्लैटीपस संसार का सबसे विचित्र जंतु है। पशु और पक्षियों के मिश्रित लक्षण रखने वाला यह जीव पानी में तैर लेता है, भूमि पर चलता-फिरता है और जमीन के भीतर सुरंग जैसा लम्बा सुराख खोद लेता है। यह चार पैर वाला जंतु अंडे देता है।

ऐमू, कोकाबर्रा तथा लायर बर्ड आस्ट्रेलिया के कुछ विचित्र पक्षी हैं। ऐमू बड़े आकार का पक्षी है। यह उड़ नहीं सकता, परन्तु अफ्रीका के शुतुरमुर्ग की भाँति तेज गति से दौड़ सकता है। कोकाबर्रा को 'लाफिंग जैकास' भी कहते हैं, क्योंकि इसकी बोली विचित्र हँसी के समान लगती है। लायर बर्ड संसार के



चित्र 15. आस्ट्रेलिया—फसलें, खनिज तथा उद्योग

मानचित्र से आस्ट्रेलिया की प्रमुख फसलें, खनिज तथा उद्योग मालूम करो। आस्ट्रेलिया में अधिकांश खनिज कहाँ पाए जाते हैं और उद्योग कहाँ स्थित हैं? आस्ट्रेलिया में पाए जाने वाले जंगली जीव-जन्तुओं की कुछ दुर्लभ किस्मों को भी देखो।

सबसे सुन्दर पक्षियों में से है। यह नकल करने में बड़ा ही कुशल है। यह अन्य पक्षियों के गाने, कुत्तों के भौंकने तथा गुजरती हुई कारों के हार्न की आवाजों की भी नकल कर लेता है।

आर्थिक विकास

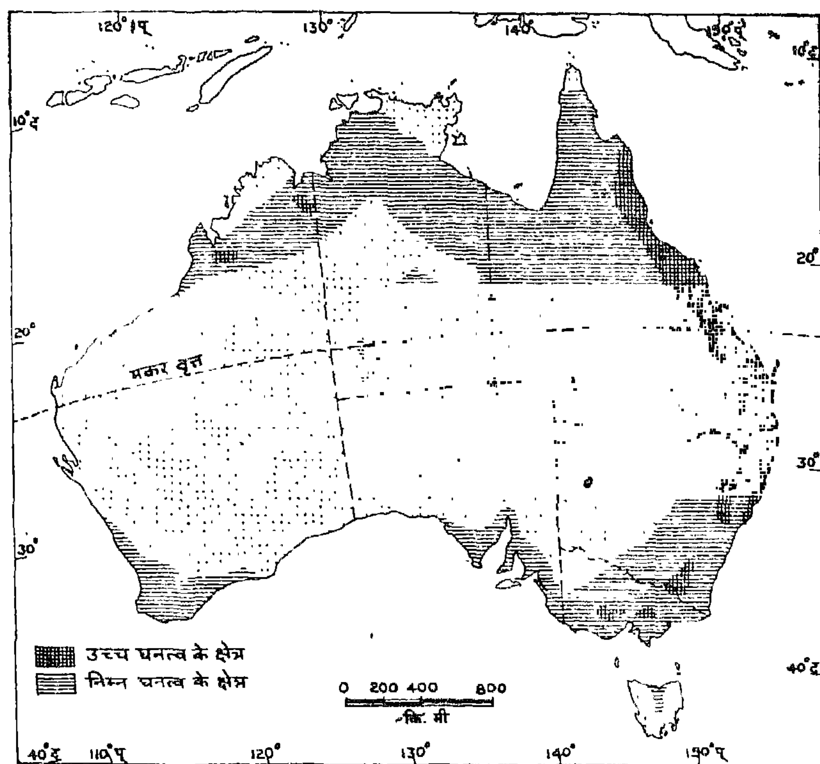
कृषि—आस्ट्रेलिया के केवल चार प्रतिशत भू-भाग पर खेती होती है। कृषि के मुख्य क्षेत्र देश के दक्षिण-पूर्वी, दक्षिण-पश्चिमी तथा पूर्वी तटीय भाग हैं। इन क्षेत्रों में जल पर्याप्त मात्रा में मिलता है। भूमि समतल है। जिससे मशीनों का खूब प्रयोग होता है। यहाँ के खेत बहुत बड़े-बड़े हैं। खेती का अधिकतर काम मशीनों से किया जाता है, क्योंकि आस्ट्रेलिया की जनसंख्या बहुत कम है।

गेहूँ आस्ट्रेलिया की सबसे महत्वपूर्ण फसल है। यहाँ से गेहूँ का निर्यात बड़ी मात्रा में होता है। जौ, जई तथा मक्का भी यहाँ पैदा की जाती है। जहाँ सिंचाई की सुविधाएँ हैं, वहाँ चावल भी उगाया जाता है। गन्ना, तम्बाकू तथा कपास मुख्यत: क्वींसलैंड में पैदा किए जाते हैं। आस्ट्रेलिया में अनेक प्रकार के फल भी उगाए जाते हैं। यहाँ से चीनी तथा फल भी निर्यात किए जाते हैं।

भेड़-पालन—आस्ट्रेलिया में संसार की सबसे अधिक भेड़ें पाली जाती हैं। यहाँ संसार की लगभग एक-तिहाई ऊन पैदा की जाती है। संसार के कुल ऊन-व्यापार का लगभग आधा भाग अकेले आस्ट्रेलिया प्रदान करता है। आस्ट्रेलिया में भेड़ें मुख्यत: ऊन प्राप्त करने के लिए पाली जाती हैं। भेड़ कम घास या शुष्क झाड़ियाँ खाकर भी जीवित रह सकती हैं। अत: आस्ट्रेलिया की शुष्क घास भूमि भेड़-पालन के लिए बहुत ही उपयुक्त है। आस्ट्रेलिया में मेरीनों जाति की भेड़ें सबसे अधिक पाली जाती हैं। इनसे सबसे अच्छा ऊन मिलता है।

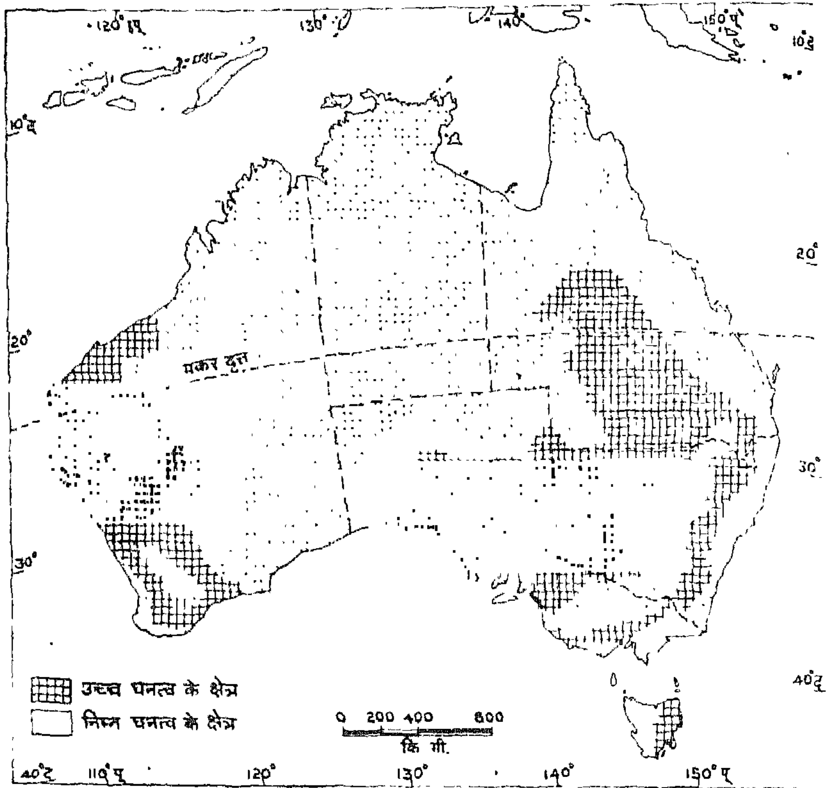
आस्ट्रेलिया में भेड़ों को बड़े-बड़े फार्मों पर पाला जाता है। इन बड़े-बड़े फार्मों को भेड़-पालन केन्द्र कहते हैं। इन केन्द्रों की देखरेख इनके मालिक के परिवार कुछ मजदूरों की सहायता से करते हैं। इन मजदूरों को 'जेकारू' कहते हैं। ये भेड़ों को चराते हैं, घायल भेड़ों की देखभाल करते हैं और भेड़ों को डिंगो नामक जंगली कुत्ते से सुरक्षित रखने के लिए फार्म की बाड़ की मरम्मत करते हैं।

एक भेड़-पालन केन्द्र प्राय: कई वर्ग किलोमीटर में फैला होता है। कुछ केन्द्र तो हज़ार वर्ग किलोमीटर तक होते हैं। यह कई खुले घास स्थलों या बाड़ों में बँटा होता है। प्रत्येक बाड़े में दो हज़ार से तीन हज़ार भेड़ें तक रखी जाती हैं। इनकी देखभाल एक या दो चरवाहे करते हैं। जब घास तथा पानी की कमी हो जाती है तब भेड़ों के समूह को कुत्तों की सहायता से एक बाड़े से दूसरे बाड़े में ले जाते हैं।



चित्र 16 (अ). आस्ट्रेलिया—पशुओं का वितरण

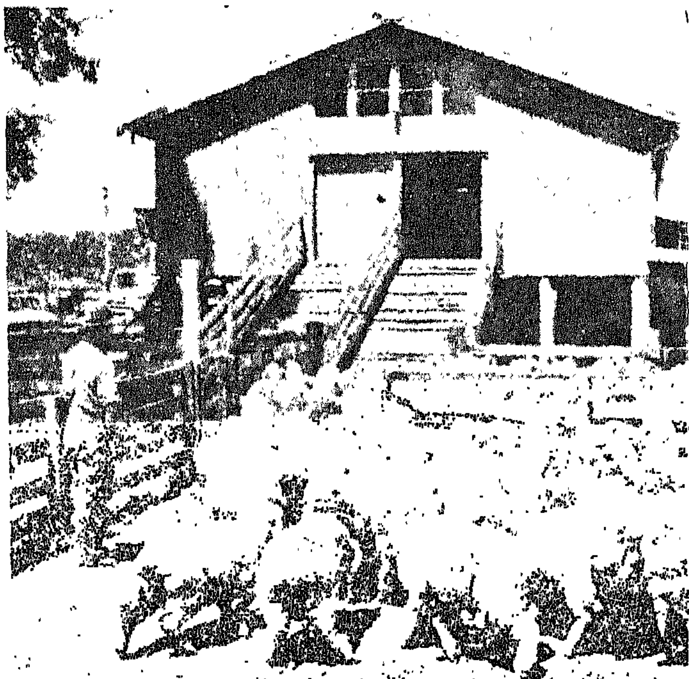
मानचित्र में देखो कि पशुपालन के मुख्य क्षेत्र अधिक वर्षा वाले भागों में हैं।



चित्र 16 (ब). आस्ट्रेलिया—भेड़ों का वितरण

भेड़ें कम वर्षा वाले क्षेत्रों में क्यों पाली जाती हैं ?

भेड़-पालन केन्द्र के मालिक के घर को 'होमस्टीड' कहते हैं। इसमें रहने के लिए सभी आधुनिक सुविधाएँ होती हैं। कुओं से पानी निकालने के लिए एक पवन चक्की लगी होती है। मजदूरों के रहने के लिए छोटे-छोटे घर और



फोटो II. ऊन-घर में भेड़ें

ये मेरिनो भेड़ें ऊन उतारने के लिए ऊन घर में ले जाई जा रही हैं। भेड़ों पर अच्छी किस्म की मोटी परत देखो।

भेड़ों की ऊन उतारने के लिए ऊन-घर भी होते हैं। ये सब इमारतें एक छोटे से गाँव जैसी दिखाई देती हैं।

भेड़ों से ऊन उतारने के दिनों में लोग बहुत ही व्यस्त रहते हैं। भेड़ों से ऊन उतारने का काम मई से जनवरी तक होता है। इस समय कुछ अतिरिक्त मजदूर काम पर लगा दिए जाते हैं। भेड़ से ऊन उतारने वाले कुशल व्यक्तियों की टोलियाँ एक केन्द्र से दूसरे केन्द्र को जाती रहती हैं। ऊन उतारने वाला

एक कुशल व्यक्ति मशीन-कैंची की सहायता से एक दिन में लगभग दो सौ भेड़ों की ऊन उतार सकता है। ऊन को छाँट कर गाँठें बना ली जाती हैं। ये गाँठें मालगाड़ी के बड़े-बड़े डिब्बों में बन्द करके अथवा विशाल ट्रकों में लादकर बेचने के लिए बाजारों में ले जाई जाती हैं। यहाँ से ये निर्यात करने के लिए पत्तनों को भेजी जाती हैं। आस्ट्रेलिया ऊन के अपने कुल उत्पादन का लगभग 95 प्रतिशत निर्यात कर देता है।

पशु-पालन—आस्ट्रेलिया के सभी राज्यों में बड़ी संख्या में पशु पाले जाते हैं। इनमें से कुछ दूध, मक्खन तथा पनीर जैसे दुग्ध उत्पाद प्राप्त करने के लिए पाले जाते हैं और कुछ को केवल मांस के लिए पाला जाता है। सबसे अच्छा मांस देने वाले पशु क्वीन्सलैंड तथा उत्तरी घास स्थलों पर पाले जाते हैं। मांस के उत्पादन का लगभग एक-तिहाई भाग निर्यात कर दिया जाता है। दुग्ध व्यवसाय के लिए पशुओं का पालन मुख्यत: पूर्वी तथा दक्षिण-पूर्वी तटीय भागों में होता है। इन क्षेत्रों की जलवायु शीतोष्ण है और पर्याप्त वर्षा के कारण यहाँ घास खूब उगती है। देश में मक्खन के कुल उत्पादन का लगभग आधा भाग निर्यात कर दिया जाता है।

खनिज—आस्ट्रेलिया में विभिन्न प्रकार के खनिज पर्याप्त मात्रा में मिलते हैं। पिछली शताब्दी में सोने की खोज होने के कारण आस्ट्रेलिया में बसने के लिए दूसरे देशों से लोग बड़ी संख्या में आए। आस्ट्रेलिया में आज भी बड़ी मात्रा में सोना निकाला जाता है। लोह-अयस्क, बाक्साइट और कोयला आस्ट्रेलिया की महत्वपूर्ण खनिज संम्पत्ति हैं। दक्षिणी महाद्वीपों में कोयले के सबसे अधिक भंडार आस्ट्रेलिया में ही हैं। लोह-अयस्क में आस्ट्रेलिया आत्म-निर्भर है। आजकल यहाँ से लोह-अयस्क बड़ी मात्रा में जापान को निर्यात किया जाता है। सीसे के उत्पादन में आस्ट्रेलिया संसार में सबसे आगे है और जस्ते के उत्पादन में इसका चौथा स्थान है। हाल ही में कई स्थानों पर पेट्रोलियम तथा प्राकृतिक गैस की भी खोज हुई है जो देश की तीन-चौथाई से कुछ कम की आवश्यकता को पूरा करती है।

निर्माण उद्योग—आस्ट्रेलिया आज संसार के बड़े-बड़े औद्योगिक देशों में गिना जाता है। यहाँ की प्रमुख निर्माण वस्तुएँ लोहा-इस्पात, कृषि संबंधी मशीनें, मोटरगाड़ियाँ, विद्युत तैयार करने वाली मशीनें, रसायन, कागज,



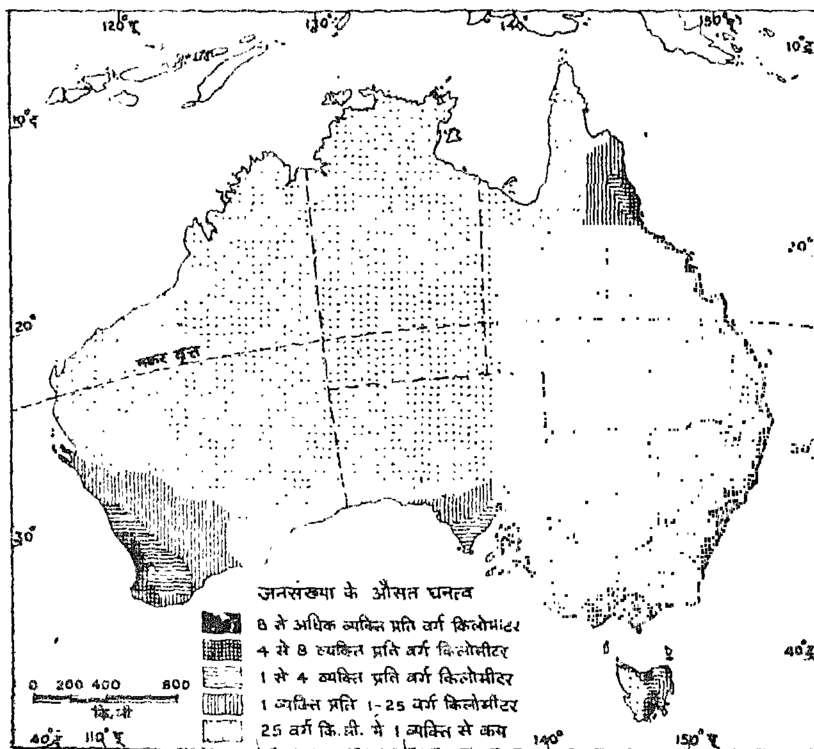
फोटो III. मोटर कारें ऐसेम्बली लाइन पर

चित्र में देखो कि कारें किस प्रकार कतार में खड़ी हैं और धीरे-धीरे गतिमान पट्टे पर आगे बढ़ रही हैं। यह भी देखो कि कारीगर उनके विभिन्न भागों को किस प्रकार जोड़ रहे हैं। क्या अब तुम बता सकते हो कि ऐसेम्बली लाइन किसे कहते हैं ?

जहाज, मशीनी औजार और परिष्कृत तेल हैं। आस्ट्रेलिया कृषि तथा पशु संबंधी कच्चे माल से कई तरह के उत्पाद तैयार करता है। इनमें सूती व ऊनी वस्त्र, चीनी, संघनित दूध, दूध पाउडर, मक्खन, पनीर, डिब्बों में बन्द फल और मांस प्रमुख हैं।

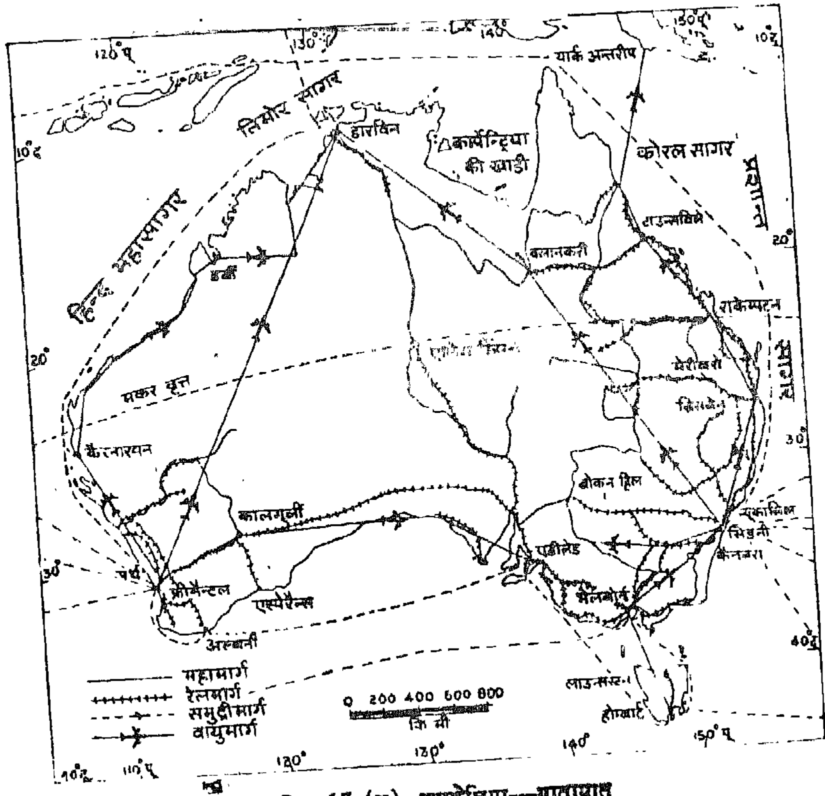
जनसंख्या तथा यातायात

यद्यपि आस्ट्रेलिया का क्षेत्रफल भारत के क्षेत्रफल के दुगने से भी अधिक है, परन्तु इसकी जनसंख्या भारत की जनसंख्या से बहुत ही कम है। आस्ट्रेलिया की जनसंख्या 1 करोड़ 36 लाख है जो भारत के तीन बड़े नगरों बम्बई, कलकत्ता तथा दिल्ली की सम्मिलित जनसंख्या से भी कम है। आस्ट्रेलिया में जनसंख्या का औसत घनत्व केवल 2 व्यक्ति प्रतिवर्ग किलोमीटर है। इस प्रकार आस्ट्रेलिया संसार का सबसे विरल जनसंख्या वाला देश है। इस देश के



चित्र 17 (अ). आस्ट्रेलिया—जनसंख्या

देश के पूर्वी तटवर्ती क्षेत्रों में जनसंख्या घनी क्यों है ?



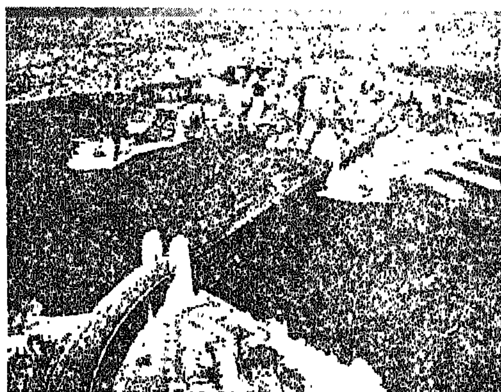
चित्र 17 (ब). आस्ट्रेलिया—यातायात
पूर्वी भाग में यातायात के साधनों का जाल घना है, इस पर ध्यान दो। ऐसा क्यों है?

अधिकतर लोग पूर्वी तटीय निम्न भूमि तथा दक्षिण-पूर्वी भागों में रहते हैं। आस्ट्रेलिया का अधिकतर भीतरी भाग अत्यन्त विरल आबाद या निर्जन है। तुम्हें यह जानकर आश्चर्य होगा कि इस देश के लगभग 60 प्रतिशत लोग देश तथा राज्यों की आठ राजधानियों में रहते हैं।

आस्ट्रेलिया के मूल निवासी—आस्ट्रेलिया में गोरे लोगों के आने से पहले यहाँ आदिवासी रहते थे। आज इन लोगों की संख्या 1 लाख 40 हजार

के लगभग है। प्रारम्भ में ये आदिवासी सारे आस्ट्रेलिया और तस्मानिया में फैले हुए थे। गोरे लोगों ने इन्हें धीरे-धीरे आस्ट्रेलिया के उत्तरी और पश्चिमी भागों की ओर तथा निकटवर्ती द्वीपों में खदेड़ दिया। आदिवासियों का जीवन कंगारू के शिकार तथा मछलियों पर निर्भर है। ये लोग शिकार करने के लिए लम्बे भाले और बूमरेंग जैसे साधारण हथियार का उपयोग करते हैं। बूमरेंग एक पैनी तिरछी तलवार के समान हथियार होता है। यदि इसे चतुराई से फेंका जाय, तो यह लौटकर फेंकने वाले के ही पास आ जाता है।

यातायात—आस्ट्रेलिया में यातायात के मुख्य साधन रेलें हैं। सिडनी को पर्थ से मिलाने वाली 'ट्रांस आस्ट्रेलियन रेलवे' इस देश का सबसे लम्बा रेल-मार्ग है। इसकी कुल लम्बाई 4000 किलोमीटर है और इस लम्बी यात्रा में कई दिन लग जाते हैं। आस्ट्रेलिया में प्रमुख सड़कों को कामनवेल्थ महामार्ग कहते हैं। प्रायः सभी सड़कें मुख्य-मुख्य रेलमार्गों के समान्तर ही फैली हुई हैं। इस देश में दूर-दूर स्थित व भेड़-पालन केन्द्रों, कृषि बस्तियों और इधर-उधर बिखरे



फोटो IV सिडनी पोताश्रय

इस विशाल पुल को देखो जो कि सिडनी पोताश्रय में एक ओर से दूसरे ओर तक फैला है। गहरे समुद्र में आगे की ओर निकले हुए चबूतरों को देखो। इन्हें जहाज-घाट कहते हैं। यह किस काम आते हैं?

नगरों में पहुँचने के लिए वायु-यातायात का अपना विशेष महत्व है। यहाँ के वायु-यातायात की एक अपनी विशेषता वायु चिकित्सायान सेवा है। इसके द्वारा सुदूरवर्ती भेड़-पालन केन्द्रों को डाक्टरों की सेवाएँ वायुयान से तुरन्त दी जाती हैं। आस्ट्रेलिया के सभी प्रमुख पत्तन संसार के अन्य प्रमुख पत्तनों से समुद्री मार्ग द्वारा जुड़े हुए हैं।

सिडनी आस्ट्रेलिया का सबसे बड़ा नगर तथा महत्वपूर्ण पत्तन है। यह न्यू साउथ वेल्स की राजधानी है और आस्ट्रेलिया के सभी प्रमुख नगरों से रेलमार्गों तथा सड़कों द्वारा जुड़ा है। मेलबोर्न विक्टोरिया की राजधानी तथा बड़ा औद्योगिक केन्द्र है। कैनबरा आस्ट्रेलिया की राजधानी है। शेष सभी राज्यों की राजधानियाँ भी अच्छे पत्तन हैं।

नवीन पारिभाषिक शब्द जो तुमने इस पाठ में पढ़े : उत्स्रुत कूप—एक विशेष प्रकार का कुआँ, जहाँ प्राकृतिक या मानव निर्मित छेद से अपने आप धरातल पर निरंतर पानी निकलता रहता है। **भेड़-पालन केन्द्र**— बड़े-बड़े फार्म जहाँ भेड़ों को विशेषकर ऊन प्राप्त करने के लिए पाला जाता है।

स्वाध्याय

पुनर्विचार

1. निम्नलिखित प्रश्नों के संक्षिप्त उत्तर दो :

(क) आस्ट्रेलिया के तीन भौतिक भाग कौन-से हैं ?

(ख) आस्ट्रेलिया के किन भागों में भारी वर्षा होती है ?

(ग) आस्ट्रेलिया में किस जाति की भेड़ें सबसे अधिक पाली जाती हैं ?

(घ) आस्ट्रेलिया में वायु-यातायात अधिक महत्वपूर्ण क्यों है ?

(ङ) आस्ट्रेलिया से कौन-सी तीन प्रमुख वस्तुएँ निर्यात की जाती हैं ?

2. अन्तर स्पष्ट करो :

    (क) कुआँ तथा उत्स्रुत कूप।

    (ख) जनसंख्या तथा जनसंख्या का औसत घनत्व।

    (ग) मानसूनी तथा भूमध्य सागरीय जलवायु।

3. निम्नलिखित कथन को सर्वोचित विकल्प से पूरा करो :

    आस्ट्रेलिया में कुल भूमि के बहुत थोड़े से भाग पर खेती की जाती है। क्योंकि—

    (क) इसका अधिकतर भाग पर्वतीय तथा खेती के योग्य नहीं है।

    (ख) देश में जनसंख्या कम है और जो है वह भी नगरों में रहना पसन्द करती है।

    (ग) यहाँ खेती करने की अपेक्षा भेड़-पालन अधिक लाभदायक है।

    (घ) यहाँ भूमि के अधिक भाग पर पानी के साधनों की बहुत कमी है।

4. आस्ट्रेलिया की वनस्पति तथा जीव-जन्तुओं का संक्षेप में वर्णन करो।

5. आस्ट्रेलिया के भेड़-पालन केन्द्र के विषय में संक्षेप में लिखो।

चित्र-अध्ययन

6. इसमें दिए सभी फोटोग्राफों को देखो और बताओ कि प्रत्येक चित्र किन आर्थिक क्रियाओं को प्रदर्शित करता है।

मानचित्र-कार्य

7. आस्ट्रेलिया के एक रेखा-मानचित्र पर प्रमुख नगरों और पत्तनों की स्थिति दिखाओ और चित्र प्रतीकों द्वारा विभिन्न उद्योगों का वितरण भी दिखाओ।

विचार-विमर्श

8. "आस्ट्रेलिया की वनस्पति और जीव-जन्तु"

    कक्षा के सभी छात्र आस्ट्रेलिया के वृक्षों, जानवरों तथा पक्षियों के विषय में जानकारी तथा उनके चित्र इकट्ठे करें। इसके बाद इकट्ठे किए हुए चित्रों की कक्षा में प्रदर्शनी लगाएँ। प्रत्येक चित्र पर उसका शीर्षक तथा विवरण अवश्य दिया जाए।

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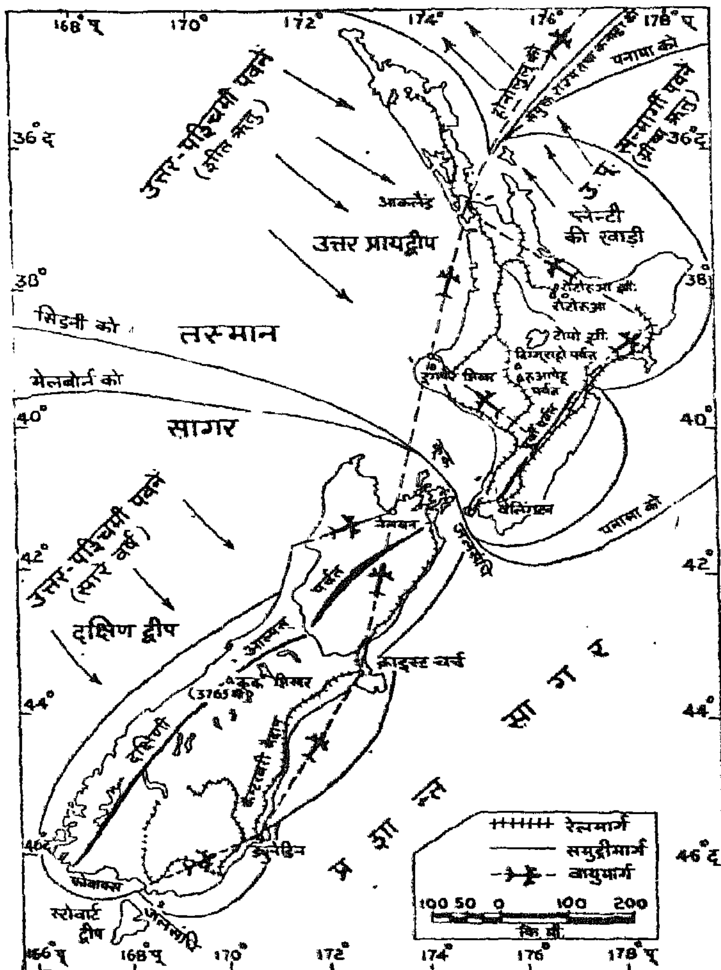
न्यूजीलैंड

> **पारिभाषिक शब्द जो तुम जानते हो : ज्वालामुखी पर्वत**—शंक्वाकार पर्वत जो उद्गार के समय ज्वालामुखी से निकले हुए पदार्थों से बना है। **मिश्रित खेती**—फसलें उगाना और साथ ही उसी खेत पर दूध तथा मांस प्राप्त करने के लिए पशुओं को पालना।

जापान के समान न्यूजीलैंड भी एक द्वीपीय देश है। यह आस्ट्रेलिया के दक्षिण-पूर्व में लगभग 2000 किलोमीटर की दूरी पर है। न्यूजीलैंड दो बड़े द्वीपों से बना है। ये उत्तर द्वीप तथा दक्षिण द्वीप कहलाते हैं और ये एक सकरी कुक जलसंधि द्वारा पृथक हैं। न्यूजीलैंड का क्षेत्रफल भारत के आंध्र प्रदेश से भी कम है। मानचित्र से ज्ञात करो कि न्यूजीलैंड के मुख्य द्वीप किन-किन अक्षांशों और देशान्तरों के बीच स्थित हैं।

भौतिक लक्षण

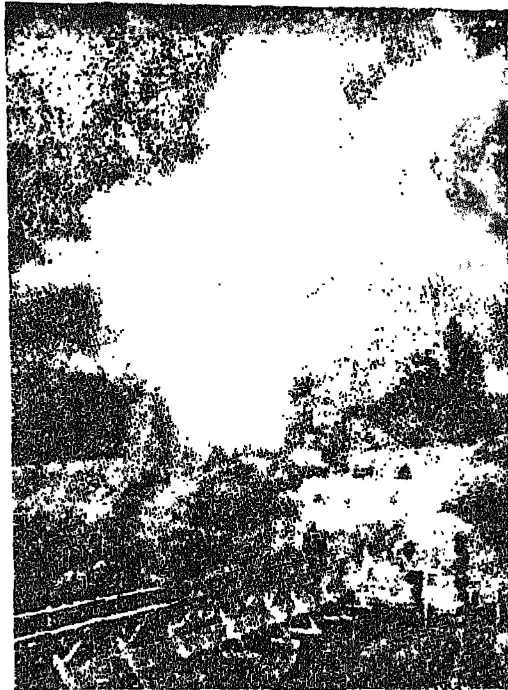
न्यूजीलैंड पर्वतीय देश है। यहाँ एक पर्वत श्रृंखला दोनों द्वीपों में फैली हुई है। दक्षिण द्वीप में इस श्रेणी को दक्षिणी आल्पस तथा उत्तर द्वीप में इसे पूर्वी पर्वत कहते हैं। दक्षिणी आल्पस पूर्वी पर्वतों की अपेक्षा अधिक ऊँचे और विस्तृत हैं। कुक पर्वत यहाँ का सबसे ऊँचा पर्वत शिखर है। इसकी ऊँचाई समुद्र तल से 3765 मीटर है। दक्षिणी द्वीप की पर्वत श्रेणियों की अधिकतर चोटियाँ वर्ष भर हिम से ढकी रहती हैं। अतः ऊँचे स्थानों से भारी मात्रा में



चित्र 18. न्यूजीलैंड—भौतिक लक्षण तथा यातायात

मानचित्र में न्यूजीलैंड के भौतिक लक्षण तथा इसकी अक्षांशीय स्थिति देखो। ये दोनों बातें तुम्हें आस्ट्रेलिया तथा न्यूजीलैंड की जलवायु में अंतर बताने में किस प्रकार सहायक होती हैं?

हिम धीरे-धीरे नीचे की ओर खिसकता है। इस प्रकार जमाव स्थान से बहुत धीरे-धीरे नीचे की ओर खिसकते हिम को **हिमानी या ग्लैशियर** कहते हैं। न्यूजीलैंड हिमानियों के लिए प्रसिद्ध है। इन हिमानियों में सबसे बड़ी तस्मान हिमानी है। दक्षिणी आल्पस का ढाल पश्चिमी तट की ओर खड़ा है और पूर्व की ओर मंद। इन पर्वतों के पूर्व में कैंटरबरी के उपजाऊ मैदान हैं।



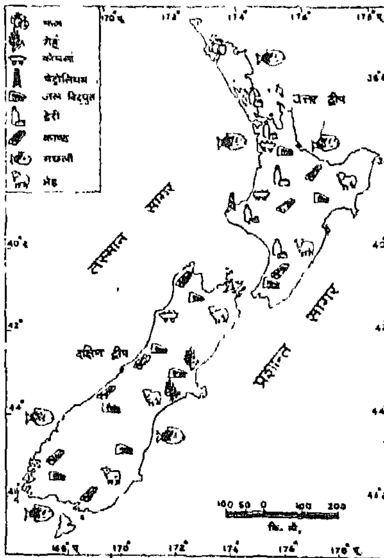
फोटो V. गाइजर

न्यूजीलैंड अपने खूबसूरत गाइजरों के लिए प्रसिद्ध है। इस गाइजर से खौलते जल तथा वाष्प के फव्वारे किस प्रकार छूट रहे हैं ?

उत्तर द्वीप में कई ज्वालामुखी पर्वत हैं। इनमें से अधिकांश मृत या विलुप्त ज्वालामुखी हैं। परन्तु कुछ अब भी सक्रिय हैं। इस क्षेत्र में भूकम्प भी बहुत आते हैं। उत्तर द्वीप में गर्म जल-स्रोत खौलते पंक सरोवर तथा गाइजर भी मिलते हैं। गाइजरों में निश्चित समय के अंतर पर खौलते जल तथा वाष्प का ऊँचा फव्वारा छूटता रहता है।

जलवायु और वनस्पति

न्यूजीलैंड शीतोष्ण अक्षांशों में स्थित है इसके चारों ओर समुद्र है और यह पछुआ पवनों की पेटी में आता है। इन्हीं सब कारणों से न्यूजीलैंड की जलवायु शीतल, मृदुल एवं सुहावनी है और यहाँ पूरे वर्ष पर्याप्त वर्षा होती है। इस प्रकार की सम जलवायु प्रायः शीतोष्ण अक्षांशों में महाद्वीपों के पश्चिमी तटों तथा द्वीपों में पाई जाती है और ऐसी जलवायु को **महासागरी या अनसमुद्री जलवायु** कहते हैं। दक्षिण द्वीप के पश्चिमी तट पर भारी वर्षा होती है और अन्य क्षेत्रों में सामान्य वर्षा।



चित्र 19. न्यूजीलैंड—फसलें, खनिज तथा उद्योग

मानचित्र में न्यूजीलैंड की फसलों, खनिजों तथा उद्योगों को देखो। यहाँ का कौन-सा उद्योग सबसे अधिक महत्वपूर्ण है ?

भारी वर्षा के क्षेत्र घने वनों से ढके हैं। इन वनों में पेड़ों के नीचे सघन झाड़ उगते हैं जिनमें अधिकतर पर्णांग (पर्त) होते हैं। इन वनों में मुख्यतः चीड़, बीच, विशाल वृक्ष-पर्णांग, विसर्पी लताएँ तथा बेलें मिलती हैं। उत्तर द्वीप में 'कौरी' जाति के बड़े-बड़े चीड़ वृक्ष मिलते हैं। इनसे इमारती लकड़ी, गोंद तथा बिरोजा मिलता है। न्यूजीलैंड फ्लैक्स यहाँ का स्थानीय पौधा है। इनसे रेशा प्राप्त किया जाता है,

जिससे मजबूत रस्सियाँ तथा जाल बनाए जाते हैं। पर्वतों के शुष्क ढालों पर घास उगती है जिस पर पूरे वर्ष पशु चराए जाते हैं।

किवी तथा पेंग्विन न्यूजीलैंड के प्रसिद्ध पक्षी हैं। किवी न्यूजीलैंड का राष्ट्रीय प्रतीक है। यह पक्षी उड़ नहीं सकता, लेकिन दौड़ता बहुत तेज है।

आर्थिक विकास

कृषि तथा उद्योग—न्यूजीलैंड में फसलें उगाने की अपेक्षा पशुचारणिक खेती अधिक महत्वपूर्ण है। देश के लगभग आधे से अधिक भू-भाग पर चरागाह हैं। केवल तीन प्रतिशत भू-भाग पर ही फसलें उगाई जाती हैं। निम्न भूमि के क्षेत्र विशेषतया दक्षिण द्वीप के पूर्वी भाग में स्थित कैंटरबरी के मैदान मिश्रित खेती के लिए प्रसिद्ध हैं। यहाँ पशु-पालन के साथ-साथ प्रमुख फसलें भी उगाई जाती हैं। यह क्षेत्र देश का अधिकांश गेहूँ, जौ और जई पैदा करता है।

न्यूजीलैंड के सबसे महत्वपूर्ण उत्पाद—मक्खन, ऊन, माँस तथा मेमने हैं। ये सभी पशुचारणिक उत्पाद हैं। मृदुल तथा नम जलवायु होने के कारण भेड़ों तथा पशुओं के लिए यहाँ पर्याप्त चारा मिलता है और वे पूरे वर्ष खुले में चरागाहों में चरते हैं।

भेड़-फार्म उत्तर तथा दक्षिण द्वीपों में लगभग समान रूप से वितरित हैं। यह अधिकतर कम वर्षा प्राप्त करने वाले ऊबड़-खाबड़ घास स्थलों में स्थित हैं। इन भेड़-फार्मों के प्रमुख उत्पाद ऊन तथा मेमनों का माँस है। आजकल जलयानों के ठण्डे गोदामों में मेमनों के पूरे-पूरे शवों को रखकर उन्हें मुख्यतः यूरोप निर्यात किया जाता है।

पशुपालन के मुख्य क्षेत्र उत्तर द्वीप में हैं। यहाँ पूरे वर्ष पर्याप्त वर्षा होने से घास हमेशा हरी-भरी बनी रहती है और पशुओं को सारे वर्ष खुले में चराया जाता है। न्यूजीलैंड में पशुओं को अधिकतर दूध प्राप्त करने के लिए ही पाला जाता है। दूध दोहने का काम मशीनों से होता है और मशीनों के द्वारा ही दूध से क्रीम निकाली जाती है। इस काम के लिए यहाँ सहकारी फैक्ट्रियाँ हैं ये मक्खन और पनीर तैयार करती हैं। मक्खन और पनीर दोनों ही न्यूजीलैंड की प्रमुख निर्यात वस्तुएँ हैं।



फोटो V॥. पनीर बनाना

चित्र में दिए एक बड़े हौज में 10,000 लीटर से भी अधिक दूध आता है। पनीर बनाते समय दूध को पकाते और खूब हिलाते हैं। यह चित्र न्यूजीलैंड की एक सहकारी डेयरी का है।

उत्तर द्वीप में मधु-मक्खियाँ पाली जाती हैं। देश के सभी तटीय भागों में मछलियाँ पर्याप्त मात्रा में पकड़ी जाती हैं।

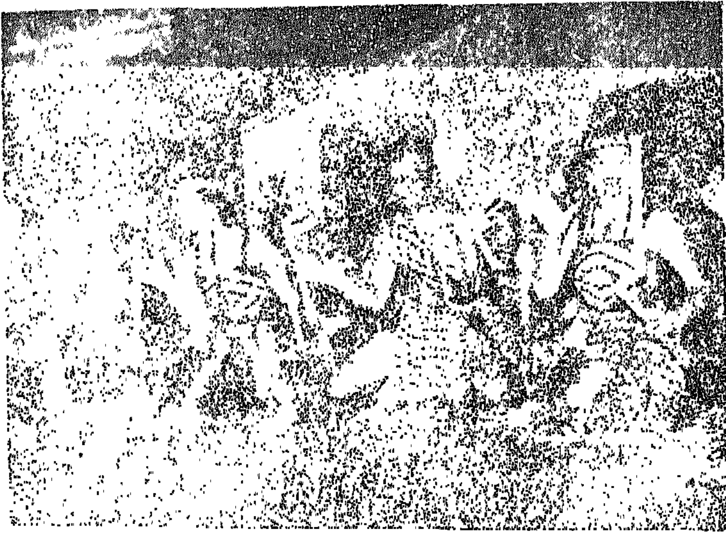
न्यूजीलैंड का प्रमुख खनिज कोयला है। यह दोनों द्वीपों में कई स्थानों पर मिलता है। न्यूजीलैंड का खाद्य संसाधन उद्योग बहुत ही विकसित है। आजकल यहाँ यातायात के उपस्कर, जूते, वस्त्र, कागज, लकड़ी तथा कार्क से बनी वस्तुएँ निर्मित की जाती हैं।

जनसंख्या तथा यातायात

न्यूजीलैंड की जनसंख्या लगभग 31 लाख है जो दिल्ली की जनसंख्या से भी कम है। यहाँ जनसंख्या का औसत घनत्व 12 व्यक्ति प्रतिवर्ग किलोमीटर

है। देश की दो-तिहाई जनसंख्या उत्तर द्वीप में रहती है। न्यूजीलैंड की अधिक जनसंख्या नगरों में रहती है। ऑकलैंड न्यूजीलैंड का सबसे बड़ा नगर है। वेलिंगटन यहाँ की राजधानी तथा महत्वपूर्ण पत्तन है।

माओरी न्यूजीलैंड के मूल निवासी हैं। वे लोग देखने में सुन्दर और गौर वर्ण के हैं। इनके बाल काले, घुंघराले होते हैं। माओरी लोगों की अपनी विकसित संस्कृति है। ये अच्छे शिकारी तथा मछुए हैं। यह जाल बुनने तथा न्यूजीलैंड फ्लैक्स से वस्त्र बनाने में निपुण हैं। माओरी लोगों ने अंग्रेजों के साथ



फोटो VII. माओरी लोगों का डंडा खेल

माओरी लोगों की एक टोली अपना लोकप्रिय डंडा खेल दिखा रही है। इन लोगों की वेष-भूषा और श्रृंगार देखो।

डटकर मुकाबला किया और अपने अधिकारों को सुरक्षित रखा है। आजकल ये लोग राष्ट्रीय कार्यों में पूरी तरह हाथ बँटाते हैं। अंग्रेजी तथा माओरी न्यूजीलैंड की दो प्रमुख भाषाएँ हैं।

न्यूजीलैंड पर्वतीय देश है, अतः यहाँ रेलमार्गों तथा सड़कों का विकास करना कठिन और खर्चीला है। इसीलिए इस देश में आंतरिक वायुमार्ग का विशेष महत्व है। इसके द्वारा यात्री एक स्थान से दूसरे स्थान पर बड़ी शीघ्रता से आ-जा सकते हैं।

नवीन पारिभाषिक शब्द जो तुमने इस पाठ में पढ़े : हिमानी—हिम या बर्फ की नदी जिसमें हिम जमाव के स्थान से धीरे-धीरे नीचे की ओर खिसकता रहता है। **महासागरीय या अनसमुद्री जलवायु**—शीतोष्ण अक्षांशों में महाद्वीपों के पश्चिमी तटों तथा द्वीपों में सारे साल पर्याप्त वर्षा वाली सम जलवायु।

स्वाध्याय

पुनर्विचार

1. नीचे दिए प्रश्नों के संक्षिप्त उत्तर लिखो :
   (क) न्यूजीलैंड के दो मुख्य द्वीप कौन-से हैं ?
   (ख) न्यूजीलैंड की जलवायु को प्रभावित करने वाले कौन-से तीन कारक हैं ?
   (ग) उत्तर द्वीप में पशुपालन क्यों महत्वपूर्ण है ?
2. अन्तर स्पष्ट करो :
   (क) गर्म जल स्रोत तथा गाइजर।
   (ख) पशुचारणिक कृषि तथा मिश्रित कृषि।
3. न्यूजीलैंड को पशुचारणिक प्रधान देश बनाने में कौन-कौन से कारक सहायक हैं ?

चित्र-अध्ययन

4. फोटोग्राफ II और VI को देखो और बताओ कि प्रत्येक चित्र कौन-से पशुचारणिक उत्पाद को प्रदर्शित करता है ?

मानचित्र-कार्य

5. न्यूजीलैंड के रेखा-मानचित्र पर निम्नलिखित प्रदर्शित करो :
   (क) गेहूँ, दूध तथा ऊन उत्पादन के क्षेत्र ।
   (ख) टोपो झील, माउंट कुक तथा कैंटरबरी मैदान ।

विचार-विमर्श

6. "आस्ट्रेलिया तथा न्यूजीलैंड की खोज"
   इस विषय पर जानकारी एकत्र करो और अबेल तस्मान तथा जेम्स कुक की कहानियाँ कक्षा में सुनाओ ।

खंड तीन

दक्षिण अमेरिका

दक्षिण अमेरिका दक्षिणी महाद्वीपों में से एक है। यहाँ के एण्डीज पर्वत बहुत ऊँचे हैं। ऊँचाई में इनका स्थान हिमालय के बाद आता है। दक्षिण अमेरिका में ऊँचे तथा विस्तृत पठार और विशाल मैदान हैं। इन मैदानों में बड़ी-बड़ी नदियाँ बहती हैं।

दक्षिण अमेरिका का अधिक भाग उष्ण कटिबंध में आता है। यहाँ अमेजन नदी की द्रोणी में संसार का सबसे बड़ा गर्म और आर्द्र वन है। इस महाद्वीप के उष्ण तथा शीतोष्ण कटिबंधीय क्षेत्रों में लम्बे-चौड़े घासस्थल भी हैं।

खेती करना तथा पशुओं को पालना यहाँ के लोगों का मुख्य व्यवसाय है। दक्षिण अमेरिका की प्रमुख फसलें—गेहूँ, मक्का, कपास, गन्ना तथा कहवा हैं। पशुओं को मुख्यतः माँस के लिए और भेड़ों को ऊन के लिए पाला जाता है। कहवा के लिए ब्राजील और पशुमांस तथा गेहूँ के लिए अर्जेंटाइना का संसार में प्रमुख स्थान है। दक्षिण अमेरिका में पेट्रोलियम, लोह-अयस्क, ताँबा, टिन तथा शोरा जैसे खनिजों के भी विशाल भंडार हैं।

दक्षिण अमेरिका जनसंख्या-वृद्धि में अन्य महाद्वीपों से आगे है। आस्ट्रेलिया के समान इस महाद्वीप के लोगों का रहन-सहन ऊँचा नहीं है। अतः दक्षिण अमेरिका के सभी देशों के लोग अपनी कृषि सुधारने और नये-नये उद्योग स्थापित करने में लगे हुए हैं। केवल इसी के द्वारा लोग अपना जीवन-स्तर ऊँचा कर सकते हैं।

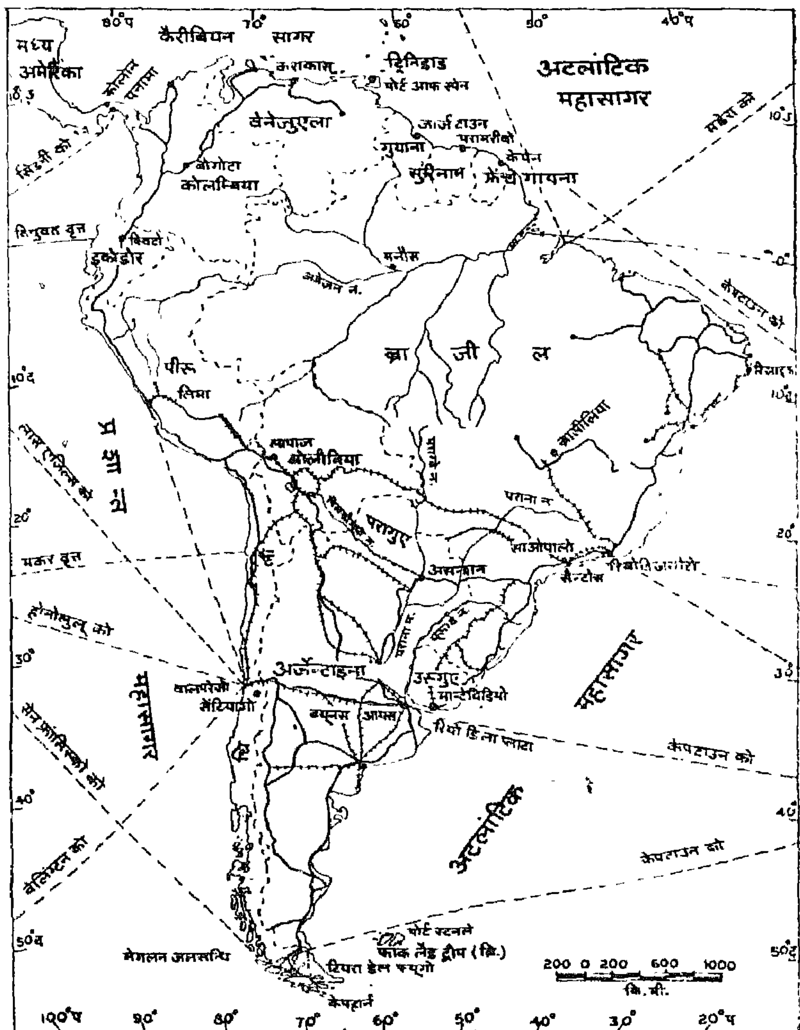
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भूमि, जलवायु एवं प्राकृतिक संपदा

पारिभाषिक शब्द जो तुम जानते हो : विषुवतीय वर्षा वाले वन—घने सदाबहार वन, जो विषुवत वृत्त के आसपास के क्षेत्रों में पाये जाते हैं। रोपण कृषि—वैज्ञानिक तथा व्यापारिक खेती जिसमें विशेषकर एक ही फसल को रोपने के बाद कई वर्षों तक लगातार उत्पादन होता रहता है।

दक्षिण अमेरिका का अधिक भाग दक्षिणी गोलार्द्ध में आता है। दक्षिण अमेरिका का लगभग दो-तिहाई भाग उष्ण कटिबंध में स्थित है। इस महाद्वीप की खोज यूरोप के लोगों ने 15 वीं शताब्दी में की। इसीलिए दक्षिण अमेरिका को नई दुनिया का एक भाग मानते हैं।

दक्षिण अमेरिका, मध्य अमेरिका और मेक्सिको को मिलाकर लैटिन अमेरिका कहते हैं। इसका कारण यह है कि इन भू-भागों की मुख्य भाषाएँ स्पेनी और पुर्तगाली हैं जिनका विकास लैटिन भाषा से हुआ है। चित्र 20 देख कर बताओ कि दक्षिण अमेरिका का सबसे बड़ा देश कौन-सा है? दो स्थल रुद्ध देशों के नाम बताओ। गुयाना, सूरीनाम और फ्रेंच गायना तीन ऐसे देश हैं जो लैटिन भाषी नहीं हैं। गुयाना, सूरीनाम, ट्रिनिडाड और टोबैगो में बहुत से भारतीय बस गए हैं।



चित्र 20. दक्षिण अमेरिका—राजनीतिक विभाग तथा यातायात

मानचित्र को देखकर दो ऐसे देशों के नाम बताओ जिनके नाम उनमें बहने वाली नदियों पर पड़े हैं।

भौतिक लक्षण

दक्षिण अमेरिका को मुख्य रूप से चार भौतिक भागों में बाँटा जा सकता है। ये भाग हैं—पश्चिमी तटीय पट्टी; पश्चिमी पर्वत-माला, मध्यवर्ती मैदान और पूर्वी उच्च भूमि।

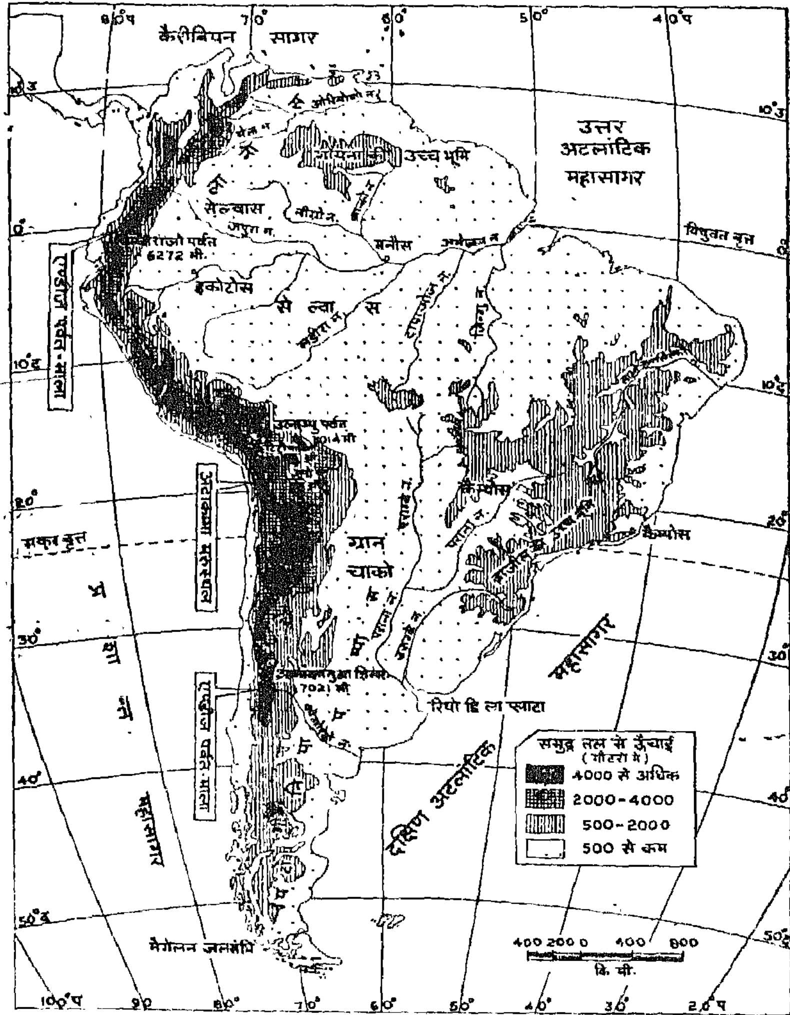
पश्चिमी तटीय पट्टी—यह दक्षिण अमेरिका के पश्चिमी तट के साथ-साथ उत्तर से दक्षिण तक फैली हुई निम्न भूमि की एक सकरी तटीय पट्टी है। अटाकामा मरुस्थल को मानचित्र में (चित्र 21) देखो। यह मरुस्थल महाद्वीप के पश्चिमी तट पर मकर वृत्त के दोनों ओर फैला है।

पश्चिमी पर्वत-माला—ये नवीन वलित पर्वत हैं और एण्डीज़ पर्वत-माला के नाम से जाने जाते हैं। एण्डीज़ पर्वत-माला दक्षिण अमेरिका के पश्चिमी तटों के समानान्तर हजारों किलोमीटर की लम्बाई में उत्तर से दक्षिण तक फैली हुई है। हिमालय के बाद एण्डीज़ शृंखला ही संसार की सबसे बड़ी और ऊँची पर्वत-माला है। इसमें कई ऊँची-ऊँची पर्वत श्रेणियाँ, पठार तथा अनेक ज्वालामुखी पर्वत हैं।

एण्डीज़ पर्वत-माला में तीन प्रमुख श्रेणियाँ हैं। इनमें से पूर्व की दो श्रेणियाँ बहुत ऊँची हैं। ये दोनों ऊँची श्रेणियाँ कई स्थानों पर एक-दूसरे से आकर मिल जाती हैं और आगे चलकर फिर से अलग-अलग हो जाती हैं। इनके मध्य में ऊँचे-ऊँचे पठार हैं। पर्वत-श्रेणियों से घिरे हुए ऐसे ऊँचे-ऊँचे पठारों को अंतरापर्वतीय पठार कहते हैं। बोलीविया का पठार इसका एक उदाहरण है।

एण्डीज़ पर्वतों की सबसे ऊँची चोटी अंकाकागुआ है। इसकी समुद्र तल से ऊँचाई 7021 मीटर है। विषुवत वृत्त के निकट भी कई पर्वत-चोटियाँ वर्ष भर हिम से ढकी रहती हैं। एण्डीज़ में कई सक्रिय ज्वालामुखी पर्वत हैं। कोटोपैक्सी संसार का सबसे ऊँचा सक्रिय ज्वालामुखी पर्वत माना जाता है। बहुत से अन्य पर्वत विलुप्त या प्रसुप्त ज्वालामुखी हैं। एण्डीज़ पर्वतीय क्षेत्रों में प्रायः भूकम्प आते रहते हैं।

मध्यवर्ती मैदान—मध्यवर्ती मैदान एण्डीज़ पर्वत और पूर्वी उच्च भूमि के बीच फैले हैं। इन मध्यवर्ती मैदानों का अधिकतर भाग ओरिनोको, अमेज़न



चित्र 21. दक्षिण अमेरिका—भौतिक लक्षण

मानचित्र में देखो कि दक्षिण अमेरिका पर्वतों, पठारों तथा नदी-घाटियों का महाद्वीप है। मानचित्र में प्रमुख नदियों के नाम पढ़ो।



फोटो VIII. हिम से ढकी एण्डीज पर्वत श्रेणियाँ

यह फोटोग्राफ दक्षिण अमेरिका के सुदूर दक्षिणी भागों के हिम से ढके एण्डीज पर्वतों का है। महाद्वीप का यह भाग इतना अधिक ठंडा क्यों है ?

और लाप्लाटा नदियों की द्रोणियों से बना है। पराना, पराग्वे, 'युरुग्वे' तथा उनकी सहायक नदियों के सम्मिलित तंत्र को 'लाप्लाटा' कहते हैं।

अमेजन संसार की सभी नदियों से अधिक जल बहाकर ले जाती है। यह 6280 किलोमीटर लंबी है। केवल नील ही इससे लम्बी नदी है। अमेजन नदी एण्डीज पर्वतों से निकलकर अटलांटिक महासागर में जाकर गिरती है। इसकी लम्बाई का अधिक भाग ब्राज़ील देश में है।

पूर्वी उच्च भूमि—पूर्वी उच्च भूमि में गायना तथा ब्राज़ील के पठार आते हैं। पूर्वी उच्च भूमि एण्डीज पर्वतों से कहीं अधिक पुरानी है।

जलवायु तथा वनस्पति

दक्षिण अमेरिका का अधिकतर भाग उष्ण कटिबंध में है। इसलिए महाद्वीप की सामान्य जलवायु गर्म है। अमेजन नदी की द्रोणी विषुवत वृत्त के निकट स्थित है। अतः यहाँ की जलवायु विषुवतीय है, जो वर्ष भर उष्ण तथा आर्द्र रहती है और वर्षा प्रायः प्रतिदिन दोपहर बाद होती है। इसलिये यहाँ विषुवतीय वर्षा वाले वन पाए जाते हैं। इन घने वनों को अमेजन नदी की द्रोणी में सेल्वास कहते हैं।



फोटो IX. अमेजन नदी के किनारे विषुवतीय वन

अमेजन नदी के किनारे इन घने विषुवतीय वर्षा वाले वनों को देखो। क्या तुम्हें ये वन तल झाड़ी से भरे दिखाई देते हैं? नदी के जल में वृक्षों की परछाइं देखो।

अमेजन-द्रोणी के उत्तर और दक्षिण में सूडानीय जलवायु की पेटियां हैं। इस जलवायु प्रदेश में शुष्क मौसम की एक विशेष ऋतु होती है और वर्षा

मुख्यत: ग्रीष्म ऋतु में होती है। इस जलवायु प्रदेश की वनस्पति मोटी और लम्बी घास है। इन उष्ण कटिबंधी घास स्थलों को ओरिनोको नदी-द्रोणी में लानोस कहते हैं और ब्राजील के मध्य भाग में कैम्पोस।

दक्षिणी पीरू और उत्तरी चिली के भागों में गर्म मरुस्थलीय जलवायु मिलती है। इस मरुस्थलीय जलवायु के क्षेत्र को अटाकामा मरुस्थल कहते हैं। नागफनी तथा कटीली झाड़ियाँ इस प्रदेश की प्राकृतिक वनस्पति हैं।

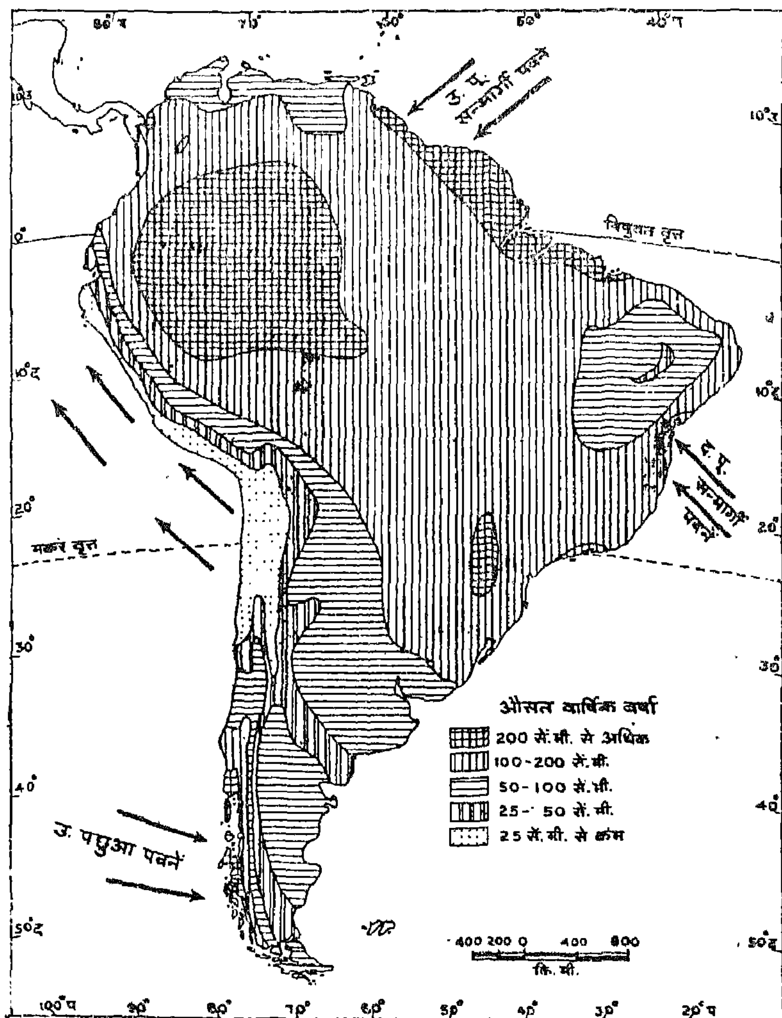
अटाकामा मरुस्थल के दक्षिण में अर्थात् मध्य चिली में भूमध्य सागरीय जलवायु पाई जाती है। इस प्रदेश में वर्षा शीत ऋतु में होती है और ग्रीष्म ऋतु शुष्क होती है। यहाँ सदाबहार वृक्ष मिलते हैं। इन वृक्षों की छाल मोटी, जड़ें लम्बी तथा पत्तियाँ मोटी और चिकनी होती हैं, जिससे वे शुष्क ग्रीष्म ऋतु को भी सहन कर सकें।

महाद्वीप के सुदूर दक्षिण अर्थात् दक्षिणी चिली में अनुसमुद्री जलवायु पाई जाती है। यहाँ वर्षा पूरे वर्ष होती है। यहाँ की प्रमुख वनस्पति शीतोष्ण मिश्रित वन हैं।

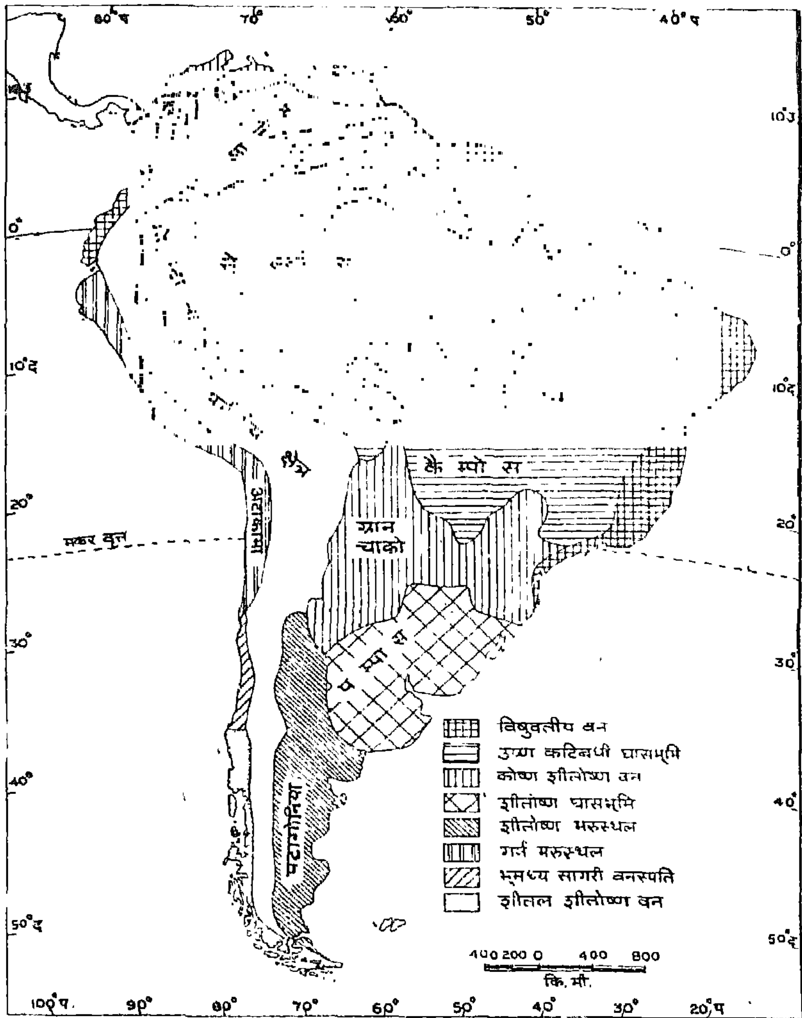
कैम्पोस घास-भूमि के दक्षिण में कोष्ण शीतोष्ण वन हैं। इन्हें ग्रान चाको कहते हैं। ग्रान चाको के दक्षिण में शीतोष्ण घास-भूमि का क्षेत्र है। इस क्षेत्र की जलवायु कोष्ण है और वर्षा साल भर होती है। इन घास-भूमियों को मध्य अर्जेंटाइना में पम्पास कहते हैं। दक्षिण की ओर आगे चल कर एण्डीज़ के पूर्व में पैटागोनिया का शीतोष्ण मरुस्थल है। इसकी जलवायु शुष्क है, क्योंकि यह वृष्टि छाया क्षेत्र में पड़ता है।

प्राकृतिक संपदा—दक्षिण अमेरिका विभिन्न प्रकार की प्राकृतिक संपदा में बहुत धनी है। यहाँ विस्तृत वन हैं जो विभिन्न प्रकार के वन्य प्राणियों से भरे हैं। वनों से कई प्रकार की वस्तुएँ प्राप्त की जाती हैं। यहाँ के लम्बे-चौड़े घास स्थलों पर विभिन्न प्रकार की फसलें पैदा की जाती हैं और पशु पाले जाते हैं। दक्षिण अमेरिका में खनिज पदार्थ भी विपुल मात्रा में पाये जाते हैं।

वन संपदा—दक्षिण अमेरिका के बहुत बड़े भाग वनों से ढके हैं। अमेज़न-द्रोणी के विशाल वन संसार में कठोर लकड़ी के सबसे बड़े भंडार हैं। इन वनों



चित्र 22 (अ). दक्षिण अमेरिका—वार्षिक वर्षा



चित्र 22· (ब). दक्षिण अमेरिका—प्राकृतिक वनस्पति

महाद्वीप के पश्चिमी तट के साथ-साथ एण्डीज पर्वतों की स्थिति मानचित्र (अ) व (ब) में देखो। ये पर्वत बोलीविया के पठार और अटाकामा तथा पैटागोनिया के मरुस्थलों पर जलवायु संबंधी क्या प्रभाव डालते हैं ?

में एक छोटे से भाग पर भी अनेक प्रकार के वृक्ष मिलते हैं। यहाँ सड़कों तथा यातायात के अन्य साधनों की बहुत कमी है। इन्हीं कारणों से इन वनों का आर्थिक उपयोग बहुत कम हो पाया है।

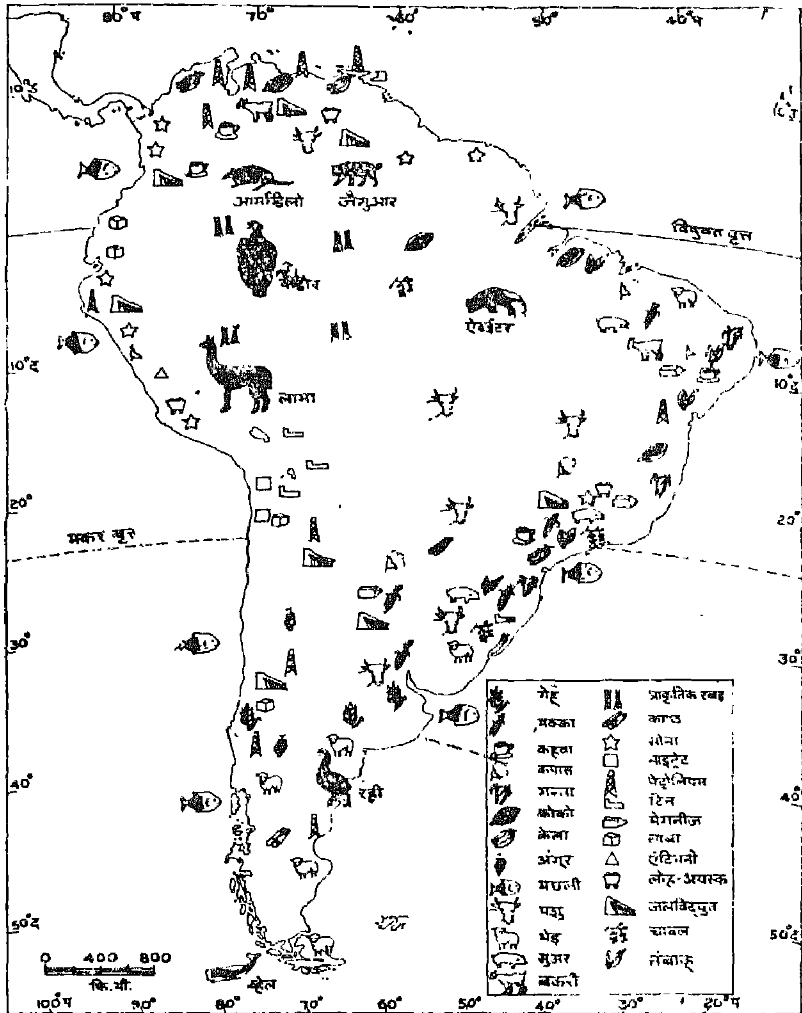
अमेज़न-द्रोणी रबर वृक्षों का घर है। परन्तु ऊपर लिखी कठिनाईयों के कारण इन वृक्षों से रबर क्षीर प्राप्त करना बहुत कठिन है। अतः आजकल इन वृक्षों से रबर का उत्पादन बहुत कम है। कार्नोबा ताड़ वृक्ष की पत्तियों से मोम प्राप्त किया जाता है। मोम का प्रयोग जूतों की पालिश, मोमबत्ती, ग्रामोफोन रिकार्ड तथा लिपस्टिक बनाने में होता है। परानाचीड़ ब्राज़ील कैम्पोस का प्रमुख वृक्ष है। इमारती लकड़ी तथा कागज़ की लुगदी के लिए इस की बहुत माँग है। येर्बा पूर्वी उच्च भूमि का मुख्य वृक्ष है। इसकी पत्तियों को चाय के समान ही पानी में उबाला जाता है। क्वेब्राको ग्रान चाको के वनों का प्रमुख वृक्ष है। इस वृक्ष से टैनिक अम्ल निकाला जाता है जिसका प्रयोग चमड़ा कमाने में होता है। एण्डीज़ पर्वतों के पूर्वी ढलानों के वनों को मोन्टाना कहते हैं। ये मुलायम लकड़ी के विशाल स्रोत हैं।

वन्य-प्राणी—दक्षिण अमेरिका, विशेषतया अमेज़न नदी की द्रोणी में विविध प्रकार के वन्य प्राणी बहुत बड़ी संख्या में मिलते हैं। यहाँ लगभग 1500 जाति के रंग-बिरंगे पक्षी भी मिलते हैं। कैन्डोर संसार का सबसे बड़ा शिकारी पक्षी है। रही न उड़ सकने वाला पक्षी है। यह हमें दक्षिण अफ्रीका के शुतुरमुर्ग या आस्ट्रेलिया के ऐमू या न्यूज़ीलैण्ड के किवी पक्षी की याद दिलाता है।

अमेजन-द्रोणी के सदाबहार वनों में पेड़ों पर कई प्रकार के बन्दर रहते हैं। इनमें से मकड़ा बन्दर, झबरा बन्दर, गिलहरी बन्दर और उल्लू बन्दर अपनी-अपनी विशेषताओं के लिए प्रसिद्ध हैं।

यहाँ कई प्रकार के सरीसृपवर्ग के प्राणी पाए जाते हैं। विषुवतीय वनों में सांप तथा अजगर सामान्य रूप से मिलते हैं। ऐनाकोंडा यहाँ का लगभग 10 मीटर लम्बा विशाल अजगर है।

ऐंटईटर तथा आर्माडिलो यहाँ के विचित्र जानवर हैं। यह अत्यन्त प्राचीन काल के स्तनधारी जानवरों में से बचे रह गए हैं। प्यूमा एक खतरनाक



चित्र 23. दक्षिण अमेरिका—फसलें, खनिज तथा वन्य-प्राणी

मानचित्र में फसलें, खनिज तथा वन्य प्राणी देखो। यह महाद्वीप संसार के आधे से कुछ कम कहवा, पाँचवां भाग टिन तथा तांबा और सातवां भाग खनिज तेल का उत्पादन करता है।

जानवर है। यह चीते से भी अधिक बलवान होता है। जैगुआर भी चीते के समान शिकारी जानवर है। ये दोनों हिंसक जानवर पेड़ों पर रहते हैं और पेड़ों पर रहने वाले जानवर जैसे बन्दर आदि को खाकर जीवित रहते हैं।

दक्षिण अमेरिका का विशेष जानवर लामा है। यह एण्डीज़ के ऊँचे भू-भागों पर रहता है। इन पर्वतीय क्षेत्रों में लामा पर बोझा ढोया जाता है। यह लम्बी गर्दन वाला पशु ऊँट प्रजाति का है। इसका आकार ऊँट से छोटा होता है। ऊँट के समान यह भी कई दिनों तक बिना पानी के रह सकता है। अल्पाका लामा से छोटा होता है। यह भी एण्डीज़ के ऊँचे पठारों पर मिलता है। ग्वानाको एक प्रकार का जंगली लामा है और यह पैटागोनिया के मरुस्थल क्षेत्रों में मिलता है।

मत्स्य उद्योग—दक्षिण अमेरिका के चारों ओर से समुद्र में, विशेषतया इसके पश्चिमी तटों के पास प्रचुर मात्रा में मछलियाँ मिलती हैं। संसार में प्रति वर्ष जितनी मछलियाँ पकड़ी जाती हैं उसका पाँचवाँ भाग दक्षिण अमेरिका प्रदान करता है। पीरू में मछली पकड़ने का उद्योग बहुत ही विकसित है।

पशुपालन—दक्षिण अमेरिका में लम्बे-चौड़े घास स्थल हैं। इन पर बहुत बड़ी संख्या में पशुओं को मुख्यत: माँस प्राप्त करने के लिए पाला जाता है। ये यूरुगुए और ब्राज़ील के अर्धनम भागों पर पाले जाते हैं।

अर्जेंटाइना में गाय-बैलों अर्थात् पशुओं को बड़े-बड़े पशु फार्मों पर पाला जाता है। ये फार्म कई वर्ग किलोमीटर क्षेत्र पर फैले होते हैं। उनके चारों ओर तारों की बाड़ लगा देते हैं। अर्जेंटाइना में पशु-पालन के ऐसे फार्मों को **एस्टांशिया** कहते हैं। एक एस्टांशिया कई बड़े-बड़े बाड़ों 'पेडौक्स' में विभाजित होता है। कुछ छोटे-छोटे बाड़ों में पशु छाँटे तथा दागे जाते हैं और इन्हें **कोराल** कहते हैं।

आधुनिक एस्टांशिया का प्रबन्ध बड़ी-बड़ी फैक्ट्रियों के समान ही किया जाता है। यहाँ एक मुख्य प्रबन्धक होता है और उसके अधीन कई विभागीय प्रबन्धक रखे जाते हैं। इनका काम एस्टांशिया के अलग-अलग विभागों की देख-रेख करना होता है। इनमें पशु विभाग, चारा मशीनरी, जल आपूर्ति, पशुओं की सुरक्षा के स्थान बनाने तथा यातायात के विभाग शामिल हैं। एस्टांशिया के प्रबन्धक बड़े-बड़े भवनों में रहते हैं। मजदूरों तथा ग्वालों के लिए भी छोटे-

छोटे मकान होते हैं। इनके अलावा एस्टांशिया में कुछ और इमारतें भी बनी होती हैं।



फोटो X. गाचो लोगों द्वारा घोड़े को पकड़ना

चित्र में अर्जेंटाइना के ये गाचो जनता को दिखा रहे हैं कि एक लम्बी रस्सी की मदद से घोड़ों को किस प्रकार पकड़ा जाता है। भटके हुए पशुओं या घोड़ों को इस प्रकार पकड़ने में बड़ी कुशलता की आवश्यकता होती है। रस्सी में पड़ा खिसकने वाला लम्बा सा फंदा देखो। इसे जानवरों की गरदन में डालकर उन्हें पकड़ा जाता है। ग्वाको लोग क्या हैं?

एस्टांशिया पर उत्तम प्रकार के मांस वाले पशुओं के पालन पर विशेष ध्यान दिया जाता है। पशुओं को घेर कर उन्हें निर्यात पत्तनों की ओर

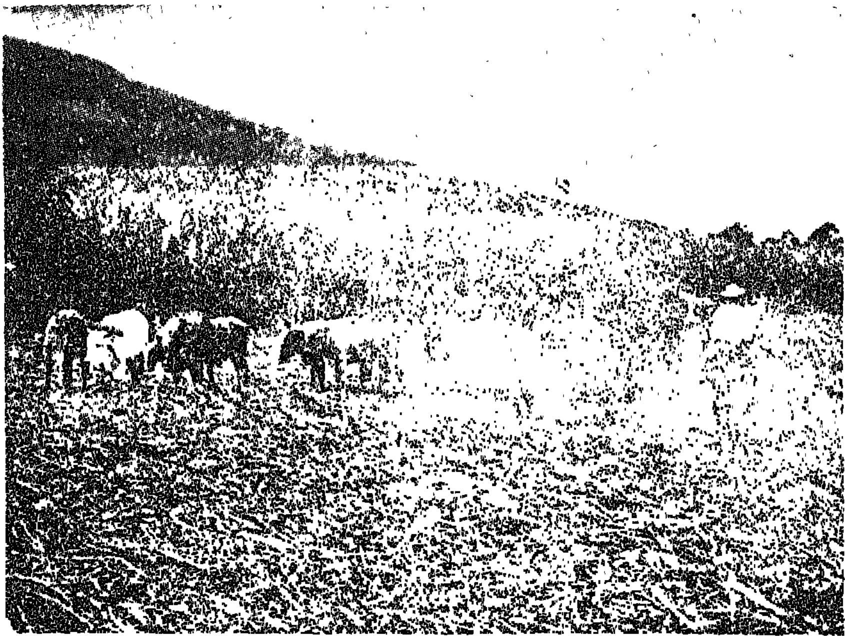
हांक ले जाते हैं। वहाँ उन्हें बूचड़खानों में काटा जाता है। अर्जेंटाइना के प्रत्येक पत्तन पर मांस को डिब्बों में बन्द करने तथा मांस का सत तैयार करने के कारखाने हैं। जहाजों में ठंडे गोदामों के आविष्कार के पहले मांस को बहुत दूर के देशों में नहीं भेजा जा सकता था। परन्तु अब जहाजों में ठंडे गोदामों के बन जाने से पशु-पालन उद्योग में बहुत अधिक उन्नति हुई है। आज अर्जेंटाइना इसी उन्नति की बदौलत संसार में पशु मांस का सबसे बड़ा उत्पादक और निर्यातक बन गया है।

भेड़-पालन—दक्षिण अमेरिका में भेड़ें भी बहुत बड़ी संख्या में पाली जाती हैं। यहाँ भेड़-पालन के प्रमुख क्षेत्र अर्जेंटाइना और चिली के अर्धशुष्क भाग हैं। अर्जेंटाइना के लगभग सभी भागों में मांस एवं ऊन प्राप्त करने के लिए बड़ी संख्या में भेड़ें पाली जाती हैं। पैटागोनिया में भेड़ व्यवसाय सबसे अधिक महत्वपूर्ण है। यहाँ भेड़ों के बहुत बड़े-बड़े रैंच हैं। कुछ रैंच तो हजारों वर्ग किलोमीटर क्षेत्र में फैले हैं।

अनाज तथा अन्य फसलें—घास स्थलों क बहुत बड़े भाग पर आजकल खेती होती है। दक्षिण अमेरिका की प्रमुख अनाजें मक्का और गेहूँ हैं। मक्का की पैदावार के लिए पर्याप्त गर्मी और अच्छी वर्षा चाहिए। ब्राज़ील तथा अर्जेंटाइना मक्का के मुख्य उत्पादक देश हैं। इसके दूसरी ओर गेहूँ की खेती शीतल शीतोष्ण प्रदेशों में होती है। दक्षिण अमेरिका में गेहूँ का सबसे अधिक उत्पादन अर्जेंटाइना में होता है। कहवा और गन्ना इस महाद्वीप की प्रमुख नकदी फसलें हैं। आजकल दक्षिण अमेरिका में कहवा तथा गन्ना के बहुत बड़े-बड़े रोपण क्षेत्र हैं। कहवा की पैदावार और निर्यात में ब्राज़ील का सर्वप्रथम स्थान है। गन्ना की फसल के लिए भी ब्राज़ील महत्वपूर्ण है। ब्राज़ील की अन्य नकदी फसल कपास है।

ब्राज़ील में कहवा अधिकतर उष्ण कटिबंधीय क्षेत्रों के पठारी ढलानों पर उगाया जाता है। कहवा वृक्ष के लिए उस समय ऊँचे तापमान और अधिक वर्षा चाहिए, जब उस पर फूल आ रहे हों। फलों के पकने और चुनने के समय कम वर्षा तथा तेज़ धूप अधिक लाभकारी होती है।

ब्राज़ील में कहवा के बड़े-बड़े बागान हैं। इन्हें फज़ेन्डा कहते हैं। एक बड़े फज़ेन्डा का क्षेत्रफल कई वर्ग किलोमीटर होता है और उसमें दस लाख तक



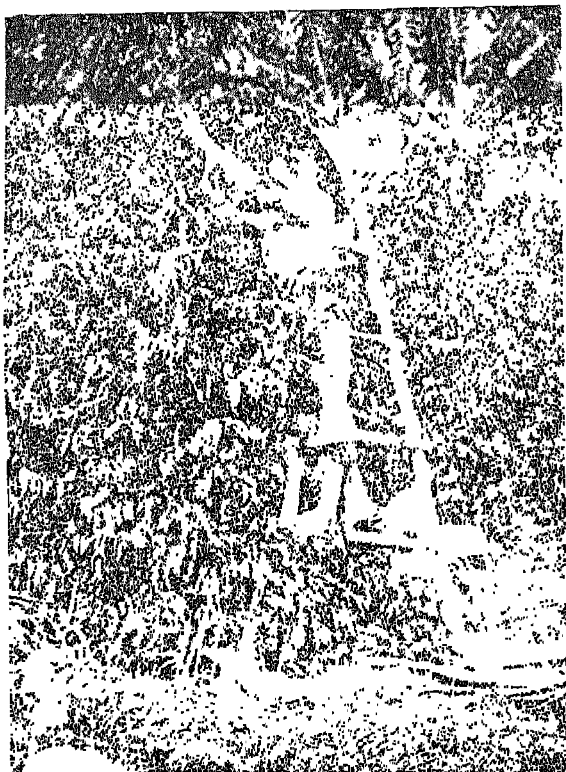
फोटो XI. ब्राज़ील के एक फार्म पर गन्ने की कटाई

फोटोग्राफ में गन्ने से लदी बैलों की गाड़ी देखो। इस गाड़ी को पांच जोड़ी बैल खींच रहे हैं। गाड़ी खींचने के लिये इतनी अधिक संख्या में बैलों की क्या जरूरत है ?

कहवा के वृक्ष होते हैं । एक फज़ेन्डा की देख-रेख के लिए तीन-चार हज़ार मजदूरों की जरूरत पड़ती है। सभी मजदूर फज़ेन्डा पर ही रहते हैं।

कहवा के वृक्षों की ऊँचाई लगभग 9 मीटर होती है । परन्तु काँट-छाँट कर उन्हें तीन मीटर तक ही ऊँचा रहने दिया जाता है । ऊँचाई कम रहने से फलों को आसानी से चुना जा सकता है। वृक्ष उगाने के 5-6 साल बाद फल लगने शुरू हो जाते हैं। यह फल बेरी या चेरी से मिलते-जुलते होते हैं। तैयार फलों को चुनने के बाद उनकी छंटाई और धुलाई होती है । फल चुनने का काम जून से नवम्बर तक किया जाता है। फलों को सुखाकर उनका छिलका मशीनों से अलग किया जाता है। इस प्रकार जो बीन प्राप्त होते हैं,

उन्हें साफ कर, छाँट कर और पालिश करके तैयार किया जाता है। इन बीन को बोरों में भर कर निर्यात कर दिया जाता है।

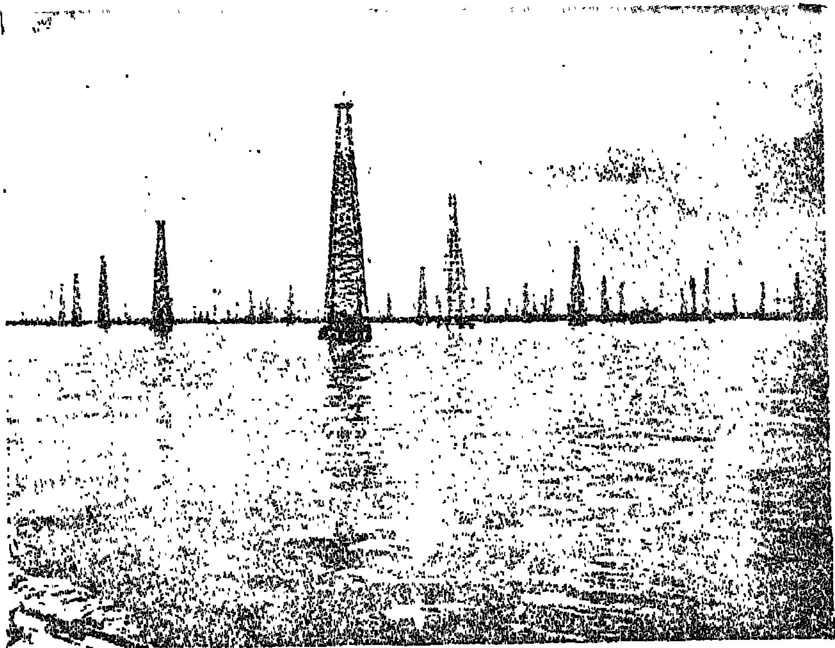


फोटो XII. ब्राज़ील के एक फज़ेन्डा में कहवा चुनना

ब्राज़ील की यह औरत कहवा के फल चुन रही है। औरत के कपड़े देखो। इस क्षेत्र में कैसी जलवायु होगी?

खनिज संपदा—दक्षिण अमेरिका में विविध प्रकार के खनिजों के विशाल भंडार हैं। वेनेजुएला तथा ट्रिनिडाड और टोबैगो द्वीप में पेट्रोलियम के विशाल भंडार हैं। मराकाइबो झील के जल के नीचे से बहुत अधिक मात्रा

में तेल निकाला जाता है, ट्रिनिडाड में तारकोल भी मिलता है। संसार के कुल उत्पादन का लगभग सातवां भाग तेल दक्षिण अमेरिका से ही प्राप्त होता है। महाद्वीप में लौह-अयस्क के भी विशाल भंडार हैं। इसके उत्पादन में ब्राज़ील का विश्व में महत्वपूर्ण स्थान है। तांबा और टिन के उत्पादन के लिए भी दक्षिण अमेरिका प्रसिद्ध है। दक्षिण अमेरिका इन दोनों खनिजों के विश्व उत्पादन का लगभग पाँचवां भाग प्रदान करता है। चिली ताँबे के उत्पादन में अग्रणीय है और बोलीविया टिन के उत्पादन में संसार में दूसरा स्थान रखता है।



फोटो XIII. मराकाइबो झील में तेल के कुएँ

मराकाइबो झील मे तेल के कुओं के ऊपर के ढाँचों को देखो। इस झील में तेल के कुएँ पेंदे के नीचे बहुत गहराई तक खोदे गए हैं। वेनेजुएला दक्षिण अमेरिका में पैट्रोलियम का सबसे अधिक उत्पादन करता है।

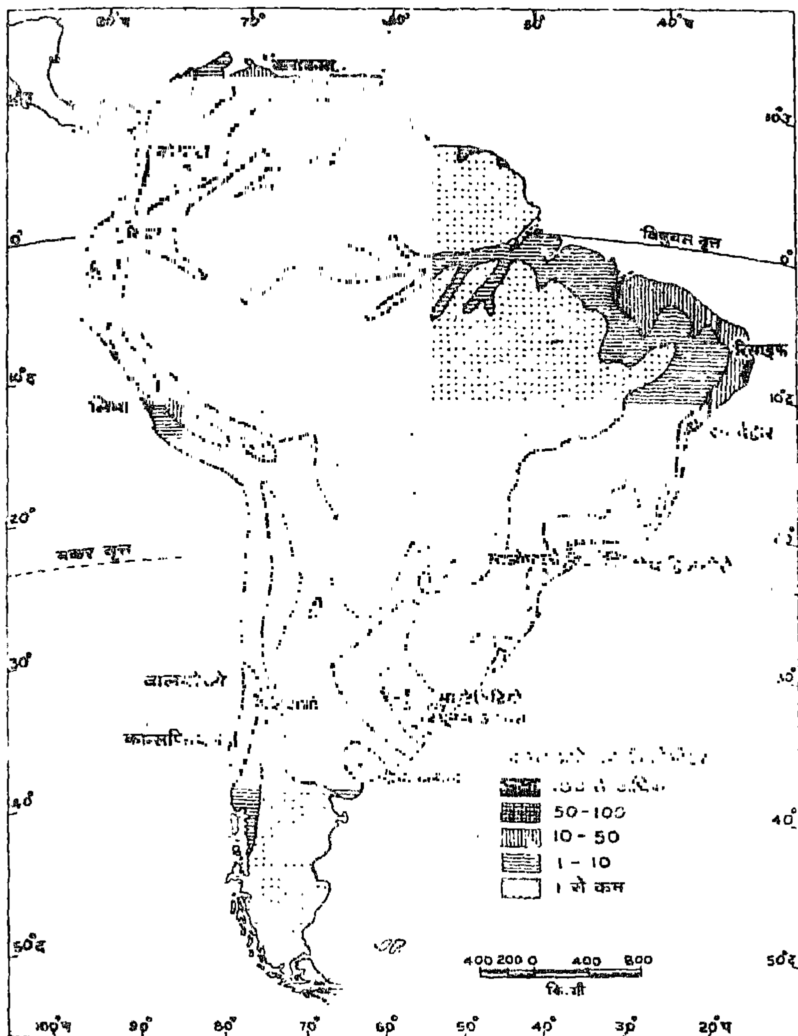
दक्षिण अमेरिका के अटाकामा मरुस्थल में प्राकृतिक शोरे के बहुत बड़े निक्षेप हैं। खाद तथा उर्वरक बनाने के लिए शोरे का उपयोग किया जाता है। चिली शोरे का सबसे बड़ा उत्पादक है। पीरु के तट के पास गुआनो द्वीपों में संसार के सबसे अच्छे प्राकृतिक खाद के भंडार हैं। बिना वर्षा वाले इन मरुस्थलीय द्वीपों में करोड़ों गुआनो पक्षी रहते हैं। इन पक्षियों का जीवन पूर्णतया मछलियों पर निर्भर है। यह विश्वास किया जाता है कि यह पक्षी आसपास के समुद्रों से प्रतिवर्ष लगभग 50 लाख टन मछलियाँ खाते हैं। सैकड़ों वर्षों से लोग इन पक्षियों के मलमूत्र को विभिन्न फसलों के लिए खाद के रूप में प्रयोग कर रहे हैं। गन्ना तथा कपास की फसल के लिए आजकल इस खाद की बहुत माँग है। इस प्राकृतिक खाद में वे सभी तत्व हैं जो पौधों के विकास के लिए ज़रूरी होते हैं।

इन खनिजों के अलावा दक्षिण अमेरिका में बॉक्साइट, मैंगनीज, चाँदी तथा एंटीमनी के भंडार हैं। सूरीनाम तथा गुयाना में बहुत अधिक मात्रा में बाक्साइट निकाला जाता है। दक्षिण अमेरिका में जलशक्ति के साधन भी विपुल हैं। परन्तु इनका विकास पूर्ण रूप से अभी तक नहीं हो पाया है। दक्षिणी अमेरिका महाद्वीप में जितनी भी जलविद्युत विकसित की गई है उसका तीन-चौथाई भाग ब्राज़ील में है।

दक्षिण अमेरिका में नये-नये निर्माण उद्योग खोले जा रहे हैं। इनमें ब्राज़ील का लोहा-इस्पात, चीनी तथा सूती वस्त्र उद्योग, अर्जेंटाइना का माँस तैयार करने का उद्योग, वेनेज़ुएला का तेल साफ करने का उद्योग तथा चिली में ताँबे के अयस्क से ताँबा निकालने का उद्योग महत्वपूर्ण है।

जनसंख्या तथा यातायात

दक्षिण अमेरिका की कुल जनसंख्या 22 करोड़ के लगभग है। यहाँ जनसंख्या का औसत घनत्व 12 व्यक्ति प्रति वर्ग किलोमीटर है। परन्तु जनसंख्या का वितरण बहुत ही असमान है। लगभग आधे महाद्वीप में जनसंख्या का औसत घनत्व 2 व्यक्ति प्रति वर्ग किलोमीटर से भी कम है। अमेज़न नदी के विस्तृत निचले मैदानों, लानोस, ग्रान चाको तथा गुयाना के पठारी भागों, अटाकामा तथा पैटागोनिया के मरुस्थलों में आबादी बहुत ही कम है। दक्षिणी अमेरिका में सबसे अधिक आबादी वाले क्षेत्र तटों के पास हैं। महाद्वीप के अधिकांश लोग पत्तन वाले नगरों तथा विभिन्न देशों की राजधानियों में



चित्र 24. दक्षिण अमेरिका—जनसंख्या का वितरण

महाद्वीप में विरल आबादी वाले बड़े-बड़े क्षेत्रों को मानचित्र से ज्ञात करो। ये क्षेत्र विरल आबाद क्यों हैं ?

रहते हैं। ब्यूनस आयर्स अर्जेंटाइना की राजधानी है और यह महाद्वीप का सबसे बड़ा नगर है। घने वनों, ऊँचे-ऊँचे पर्वतों तथा यातायात के साधनों की कमी के कारण महाद्वीप के भीतरी भागों में कम जनसंख्या है।

दक्षिण अमेरिका में मुख्यत: तीन प्रजाति के लोग रहते हैं। यह हैं मूल इन्डियन या अमेरिकन इन्डियन, नीग्रो तथा यूरोपीय। इनके अलावा यहाँ मिश्रित प्रजातियों के लोग भी बड़ी संख्या में रहते हैं। इनमें इन्डियन और यूरोपीय जातियों के मिश्रण से **मेस्टीज़ो**, नीग्रो तथा यूरोपीय जातियों के मिश्रण से **मुलाटो** तथा नीग्रो और इन्डियन के मिश्रण से **जंम्बो** आदि प्रसिद्ध जातियाँ बन गई हैं। इन मिश्रित जातियों में मेस्टीज़ो की संख्या सबसे अधिक है। दक्षिण अफ्रीका की भाँति यहाँ विभिन्न प्रजाति के लोगों के बीच कोई भेदभाव नहीं है।

दक्षिण अमेरिका में यातायात के साधनों का विकास हाल ही में प्रारंभ हुआ है। लम्बे-चौड़े विषुवतीय वन, एंडीज़ की ऊँची-ऊँची पर्वत श्रेणियाँ और पूर्वी उच्च भूमि यातायात के विकास में हमेशा बाधक रहे हैं। अमेज़न तथा लाप्लाटा नदियाँ सस्ता यातायात प्रदान करती हैं। इन नदियों में बहुत दूर तक नावें चलाई जाती हैं। अर्जेंटाइना और ब्राज़ील के मैदानों में ही रेलों का विकास हो पाया है। सभी मुख्य रेल-मार्ग पूर्व-पश्चिम दिशा में हैं। संसार में बहुत ऊँचाई पर बने कुछ रेल-मार्ग चिली में हैं।

नवीन पारिभाषिक शब्द जो तुमने इस पाठ में पढ़े : अंतरापर्वतीय पठार—वह ऊँचे पठार जो ऊँची-ऊँची पर्वत श्रणियों से घिरे हों। **मेस्टीज़ो**—दक्षिण अमेरिका की एक प्रजाति जो इंडियन तथा यूरोपीय जातियों का मिश्रण है।

स्वाध्याय

पुनर्विचार

1. निम्नलिखित प्रश्नों के उत्तर संक्षेप में लिखो :

(1) दक्षिण अमेरिका के कौन से चार भौतिक भाग हैं ?

(2) दक्षिण अमेरिका के उन तीन देशों के नाम बताओ जिनकी भाषा लेटिन नहीं है।

(3) दक्षिण अमेरिका की जलवायु सामान्यतः गर्म क्यों है ?

(4) दक्षिण अमेरिका की मुख्य तीन नकदी फसलों के नाम बताओ ?

(5) दक्षिण अमेरिका के चार प्रमुख खनिज कौन-कौन से हैं ?

2. अंतर स्पष्ट करो :

(1) उष्ण कटिबन्धीय घास-स्थल और शीतोष्ण घास-स्थल ।

(2) सेल्वास और मोन्टाना ।

3. नीचे दिये कालमों से सही जोड़े बनाओ :

(1) सबसे बड़ा एक शिकारी पक्षी ।	(क) रही
(2) दक्षिण अमेरिका का एक पक्षी जो उड़ नहीं सकता ।	(ख) लामा
(3) ऊँट जाति का लम्बी गर्दन वाला एक जानवर ।	(ग) कँडोर
(4) दक्षिण अमेरिका का एक अति प्राचीन समय का स्तनधारी जानवर ।	(घ) एनाकोंडा
(5) बहुत बड़ा एक अजगर ।	(ङ) जैगुआर
(6) दक्षिण अमेरिका का एक हिंसक जानवर ।	(च) आर्माडिलो

4. दक्षिण अमेरिका की जलवायु तथा प्राकृतिक वनस्पति का आपस में सम्बंध बताते हुए विवरण लिखो ।

5. दक्षिण अमेरिका के घने आबाद क्षेत्र कौन-कौन से हैं ? यह क्षेत्र घने आबाद क्यों हैं ?

चित्र अध्ययन

6. फोटोग्राफ IX और XIII का अध्ययन करो । इनके द्वारा प्रदर्शित कौन-सी प्राकृतिक सपदा एक बार समाप्त हो जाने के बाद पुनः मिल सकती है ।

मानचित्र-कार्य

7. दक्षिण अमेरिका के रेखा-मानचित्र पर मुख्य फसलों, खनिजों, रेलमार्गों तथा सड़कों को प्रदर्शित करो।

विचार-विमर्श

8. "दक्षिण अमेरिका के जंगलों के वासी" इस विषय पर जानकारी एकत्रित करो और कक्षा को इन लोगों के जीवन के बारे में सुनाओ।

खंड चार

उत्तर अमेरिका

उत्तर अमेरिका संसार का तीसरा सबसे बड़ा महाद्वीप है। यह नई दुनिया का एक भाग है, क्योंकि इसकी खोज हुए अभी बहुत दिन नहीं हुए हैं। उत्तर अमेरिका संसार के सबसे समृद्धशाली तथा महान् औद्योगिकृत महाद्वीपों में से है। इस महाद्वीप में विस्तृत वन, उपजाऊ कृषि क्षेत्र, अपार खनिज सम्पदा, विशाल जल-शक्ति के साधन तथा इसके तटों के पास मछली पकड़ने के विस्तृत क्षेत्र हैं। इसीलिए इस महाद्वीप के अधिकांश लोगों के रहन-सहन का स्तर बहुत ऊँचा है। उत्तर अमेरिका में जनसंख्या का वितरण बहुत ही असमान है। यहाँ आधुनिक यातायात के साधनों का घना जाल बिछा है।

कनाडा एक बड़ा देश है। यहाँ प्राकृतिक संपदा के विशाल भंडार हैं। परन्तु यहाँ की जनसंख्या बहुत कम है। आज कनाडा संसार के मुख्य निर्माण उद्योगों वाले देशों में गिना जाता है। यह बहुत बड़ी मात्रा में कच्चे माल तथा निर्माण उद्योगों के उत्पादों का निर्यात करता है।

संयुक्त राज्य अमेरिका ने कृषि तथा उद्योग दोनों में ही बहुत प्रगति की है। इस देश में भी विभिन्न प्रकार की प्राकृतिक संपदा के विशाल भंडार हैं। आज संयुक्त राज्य अमेरिका अंतर्राष्ट्रीय व्यापार में संसार में सबसे आगे है और यहाँ के लोगों के रहन-सहन का स्तर भी सबसे ऊँचा है।

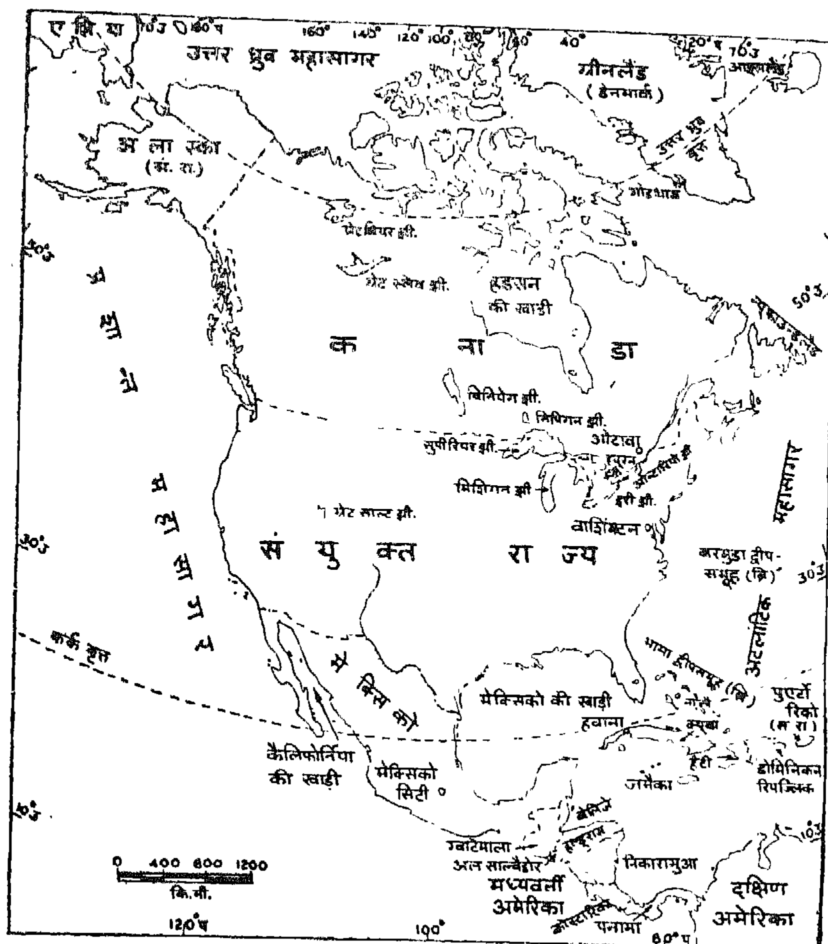
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भूमि, जलवायु एवं प्राकृतिक संपदा

पारिभाषिक शब्द जो तुम जानते हो : महाखड्ड—खड़े ढलान वाली गहरी नदी घाटी। **टुंड्रा प्रदेश**—उत्तर ध्रुव वृत्त के भीतर वह अति शीत प्रदेश जिसकी प्राकृतिक वनस्पति काई, लाइकेन और बौने वृक्ष हैं। **विस्तृत खेती**—खेती करने का वह ढंग जिसमें केवल थोड़े से ही किसान बड़े-बड़े खेतों पर प्रायः मशीनों से खेती करते हैं।

ग्लोब का अध्ययन करने से तुम्हें ज्ञात होगा कि उत्तर अमेरिका पूर्णतया उत्तरी गोलार्द्ध में स्थित है। इस महाद्वीप को कौन-कौन से महासागर घेरे हुए हैं ? उत्तर अमेरिका की स्थिति अक्षांश और देशांतर में बताओ। आकार में इस माहद्वीप का स्थान एशिया और अफ्रीका के बाद है। क्षेत्रफल में यह भारत से लगभग 8 गुना बड़ा है। इसकी आकृति की तुलना दक्षिण अमेरिका तथा अफ्रीका की आकृतियों से करो। इनमें तुम्हें क्या समानता दिखाई देती है ?

चित्र 25 में दिए गए मानचित्र को देखो। इस महाद्वीप के दो सबसे बड़े देश कनाडा और संयुक्त राज्य अमेरिका हैं। इन दोनों मित्र देशों को अलग करने वाली सीमा किस अक्षांश रेखा पर है ? उत्तर-पूर्व में स्थित बड़े द्वीप का नाम बताओ। यह डेनमार्क के आधीन है। कैलिफोर्निया की खाड़ी किस देश की भूमि से घिरी है ? कैरीबियन सागर में सबसे बड़ा द्वीप कौन-सा है ? इस द्वीपीय



चित्र 25. उत्तर अमेरिका—राजनीतिक विभाग

उत्तर अमेरिका में संसार के कुछ बड़े देश हैं। ये देश कौन-से हैं? इस महाद्वीप के तीन बड़े देशों की राजधानियाँ ज्ञात करो।

देश की राजधानी का क्या नाम है ? उत्तर और दक्षिण अमेरिका को मिलाने वाली भू-सन्धि का क्या नाम है ? यह किस देश में है ?

भौतिक लक्षण

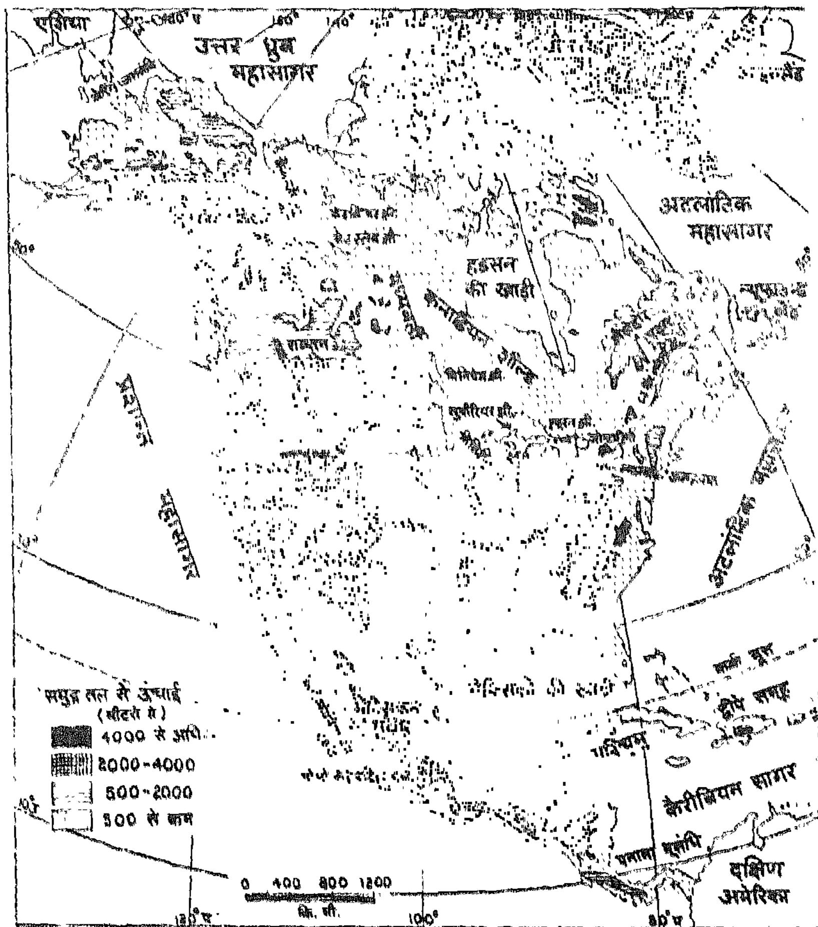
चित्र 26 में दिए मानचित्र को देखो। उत्तर अमेरिका को तीन प्रमुख भौतिक भागों में बाँटा जा सकता है। ये भाग हैं—पश्चिमी कार्डिलेरा, पूर्वी उच्च भूमि तथा मध्यवर्ती विशाल मैदान।

पश्चिमी कार्डिलेरा—महाद्वीप का पश्चिमी भाग एक लम्बा-चौड़ा पर्वतीय प्रदेश है। इसे पश्चिमी कार्डिलेरा कहते हैं। यह महाद्वीप की पूरी लम्बाई में उत्तर से दक्षिण तक फैला है। उत्तर अमेरिका की अधिकांश नदियाँ पश्चिमी कार्डिलेरा से ही निकलती हैं। पश्चिमी कार्डिलेरा का सबसे ऊँचा पर्वत शिखर माउन्ट मैकिन्ले है। यह अलास्का में स्थित है और इसकी समुद्रतल से ऊँचाई 6187 मीटर है।

पश्चिमी कार्डिलेरा में कई समानान्तर पर्वत श्रेणियाँ हैं। इनमें से सबसे प्रमुख रॉकी पर्वत श्रेणी है। अन्य दो श्रेणियाँ तटीय श्रेणी तथा सेरानिवादा हैं। इन श्रेणियों से घिरे हुए कुछ अन्तरापर्वतीय पठार हैं। ग्रेटबेसिन इनमें से सबसे बड़ा अन्तरापर्वतीय पठार है। इस पठार की नदियाँ समुद्र तक नहीं पहुँचतीं। इसीलिए यह अन्तःस्थलीय जल निकास का क्षेत्र बन गया है। ग्रेटबेसिन के दक्षिण में कोलोरैडो का पठार है। कोलोरैडो तथा उसकी सहायक नदियों ने इस क्षेत्र की मुलायम चट्टानों में बहुत गहरी-गहरी घाटियाँ काट ली हैं। इनमें से अनेक महाखड्ड कहीं-कहीं तो 1800 मीटर से भी अधिक गहरे हैं। इस प्रकार के बहुत लंम्बे तथा गहरे महाखड्डों को जिनके किनारे दीवार के समान होते हैं **कैनियन** कहते हैं। कोलोरैडो का विशाल कैनियन संसार में सबसे बड़ा है और अपनी प्राकृतिक सुन्दरता के लिए प्रसिद्ध है। पश्चिमी कार्डिलेरा के अलास्का और मेक्सिको के भागों में कई सक्रिय ज्वालामुखी हैं।

पूर्वी उच्च भूमि—पूर्वी उच्च भूमि में अपलेशियन पर्वत और लेब्रेडोर तथा न्यूफाउंडलेंड में इनके विस्तार सम्मिलित हैं। ये पर्वत पश्चिमी कार्डिलेरा से बहुत पुराने हैं और बहुत समय से घिस-घिस कर इनकी ऊँचाई बहुत कम हो गई है।

मध्यवर्ती विशाल मैदान—मध्यवर्ती विशाल मैदान पश्चिमी कार्डिलेरा तथा पूर्वी उच्च भूमि के बीच में स्थित है। इस मैदान के उत्तरी भाग में



चित्र 26. उत्तर अमेरिका—भौतिक लक्षण

मानचित्र में उत्तर-दक्षिण दिशा में फैले प्रमुख भौतिक भागों को देखो। उत्तर-पूर्व में स्थित सबसे बड़े द्वीप का नाम बताओ। यह संसार का सबसे बड़ा द्वीप है।

कनाडियन शील्ड तथा मेकेन्जी नदी की द्रोणी है। इसके मध्य तथा दक्षिणी भाग में मिसीसिपी, मिसौरी नदियों की विशाल, निम्न और सपाट द्रोणी फैली हुई हैं। कनाडियन शील्ड हडसन की खाड़ी को घेरे हुए है। यह संसार की बहुत पुरानी चट्टानों से बनी है। बहुत समय से घिस-घिस कर यह मैदान के समान हो गई है। कनाडियन शील्ड के दक्षिण में मीठे पानी की पाँच बड़ी-बड़ी झील हैं। इन झीलों के नाम मानचित्र से ज्ञात करो। संसार प्रसिद्ध न्यागरा प्रपात इरी तथा ओन्टारियो झीलों के बीच स्थित है। इस क्षेत्र की प्रमुख नदी सेंटलारेन्स है।

जलवायु तथा वनस्पति

उत्तर अमेरिका एक बहुत बड़ा महाद्वीप है। यह उत्तर में ध्रुवीय क्षेत्र से लेकर दक्षिण में उष्ण कटिबंधीय क्षेत्र तक फैला हुआ है। रॉकी पर्वत तथा पूर्वी उच्च भूमि का विस्तार उत्तर दक्षिण दिशा में है। इन दोनों ऊंचे भू-भागों के बीच स्थित मध्यवर्तीय विशाल मैदान एक बड़े गलियारे के समान है। इसीलिए इस मैदान में उत्तर से ठण्डी पवनें तथा दक्षिण से गर्म पवनें बिना किसी रुकावट के आती रहती हैं। महाद्वीप का उत्तर-पश्चिमी तट पश्चिमी पवनों के क्षेत्र में तथा इसका दक्षिण-पूर्वी तट संमार्गी पवनों के क्षेत्र में आता है। इन दोनों प्रकार की पवनों से तटीय भागों पर खूब वर्षा होती है। महाद्वीप के दक्षिण पश्चिम तट के साथ कैलीफोर्निया की ठण्डी धारा तथा उत्तरी-पूर्वी तट के साथ लेब्रेडोर की ठण्डी धारा बहती है। इनके अतिरिक्त दक्षिण-पूर्वी तट के साथ गल्फस्ट्रीम और उत्तर-पश्चिमी तट के साथ अलास्का की गर्म धाराएँ बहती हैं। ये सभी धाराएँ तटवर्ती क्षेत्रों के तापमान तथा वर्षा पर अपना प्रभाव डालती हैं। ऊपर लिखी सभी बातों के कारण उत्तर अमेरिका की जलवायु में बहुत ही भिन्नता पाई जाती है।

महाद्वीप के अधिक भाग में शीत ऋतु बहुत ठण्डी होती है क्योंकि उत्तर की ओर से आने वाली ठण्डी पवनें बिना किसी रुकावट के दक्षिण में बहुत दूर तक पहुँच जाती हैं। महाद्वीप के उत्तरी तथा मध्य भागों का तापमान शीत ऋतु में हिमांक से कई अंश नीचे रहता है। कभी-कभी मेक्सिको की खाड़ी के उत्तर के तटीय क्षेत्र पर भी शीत लहरें अनुभव की जाती हैं।

चित्र 27. उत्तर अमेरिका—वार्षिक वर्षा तथा प्राकृतिक वनस्पति

मानचित्र में वर्षा के वितरण का प्राकृतिक वनस्पति पर प्रभाव देखो। एक वनस्पति क्षेत्र की जलवायु दूसरे वनस्पति क्षेत्र की जलवायु से किस प्रकार भिन्न है?

चित्र 27 में दिए मानचित्र को देखकर उत्तर अमेरिका में अधिक वर्षा के तीन प्रमुख क्षेत्र ज्ञात करो। इन तीनों क्षेत्रों में अधिक वर्षा किन पवनों से होती है? महाद्वीप के भीतरी भागों में वर्षा कम होती है। संयुक्त राज्य के दक्षिण-पश्चिमी भागों तथा इससे मिले मेक्सिको के भागों में वर्षा बहुत ही कम होती है। मरुस्थल इसी क्षेत्र में पाये जाते हैं। इन क्षेत्रों में बहुत कम वर्षा होने का क्या कारण है?

चित्र 27 में दिए गए उत्तर अमेरिका के वनस्पति क्षेत्रों को देखो। इन क्षेत्रों का विस्तार विभिन्न प्रकार के जलवायु क्षेत्रों के समान ही है। महाद्वीप के धुर उत्तर में अति शीत जलवायु मिलती है। यहाँ शीत ऋतु बहुत लम्बी और अत्यन्त ठंडी होती है। इसके दूसरी ओर यहाँ ग्रीष्म ऋतु बहुत छोटी और

शीतल होती है। वर्ष के अधिक भाग में यहाँ की भूमि बहुत अधिक शीत के कारण बर्फ से जमी रहती है। इसलिये इस क्षेत्र में टुण्ड्रा वनस्पति मिलती है। काई, लाइकेन, कुछ घासें, बेरी जाति की कुछ छोटी-छोटी झाड़ियाँ और बौने वृक्ष टुण्ड्रा प्रदेश की प्रमुख वनस्पति हैं। यहाँ के मुख्य जानवर ध्रुवीय भालू, करिवाऊ, ध्रुवीय बैल तथा रेंडियर हैं।



फोटो XIV. टुण्ड्रा प्रदेश में एक शिकारी

उत्तरी कनाडा के टुण्ड्रा प्रदेश में यह शिकारी दो भेड़ियों को मार कर और उन्हें स्लेज पर लाद कर अपने शिविर को लौट रहा है। भूमि तथा वृक्षों पर पड़ी बर्फ, प्राकृतिक वनस्पति और शिकारी के भारी कपड़ों को देखो। ऐसे ठण्डे प्रदेश में लोगों की जीविका के साधन क्या हो सकते हैं?

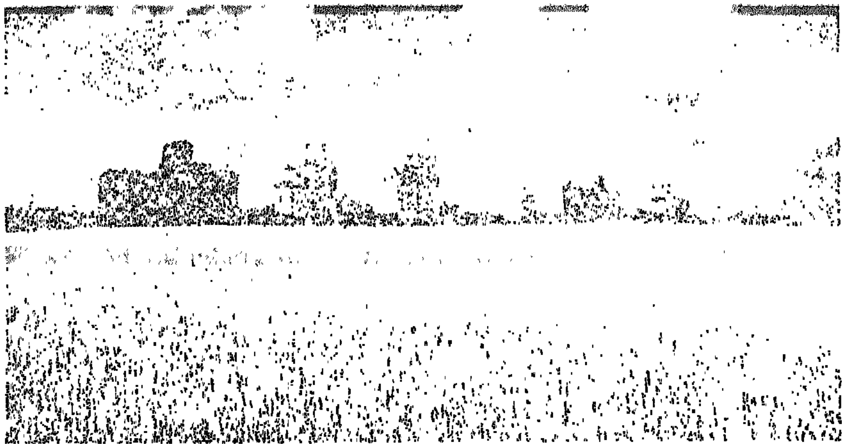
टुण्ड्रा प्रदेश के दक्षिण में शंकुधारी वनों की विशाल पेटी है। ये वन कनाडा के आर-पार अटलांटिक महासागर से प्रशांत महासागर तक फैले हुए हैं। ये संयुक्त राज्य अमेरिका के पश्चिमी पर्वतीय भागों पर भी पाए जाते हैं। इस प्रदेश में शीत ऋतु अत्यन्त ठण्डी तथा ग्रीष्म ऋतु छोटी और कोष्ण होती है। यहाँ वर्षा कम तथा अधिकतर हिम के रूप में होती है। इन वनों के सामान्य वृक्ष स्प्रूस, चीड़, लार्च तथा देवदार हैं। कैरिबाउ, बीवर, सफेद लोमड़ी, लिंक्स, मिंक तथा भेड़िया आदि इस क्षेत्र के प्रमुख जानवर हैं।

शंकुधारी वनों के दक्षिण में मिश्रित वनों की पट्टी है। इन वनों में शंकुधारी वृक्षों के साथ चौड़ी पत्ती वाले पर्णपाती वृक्ष भी मिलते हैं। पर्णपाती वृक्ष अपनी पत्तियाँ शीत ऋतु में गिरा देते हैं। ओक, बर्च, मैपिल तथा चेस्ट-नट पर्णपाती वृक्षों के उदाहरण हैं। इन वृक्षों से कठोर लकड़ी मिलती है। चीड़, फर तथा सीडर यहाँ के सामान्य शंकुधारी वृक्ष हैं। इनसे मुलायम लकड़ी मिलती है। इन वनों के बहुत बड़े भाग को साफ कर दिया गया है और इस पर अब खेती की जाती है।

मध्य अमेरिका के अधिकतर भागों, मेक्सिको के पूर्वी तट के बहुत बड़े भाग और पश्चिमी द्वीप समूह में बहुत वर्षा होती है और यहाँ तापमान वर्ष भर ऊँचा रहता है। इसीलिए इस क्षेत्र की वनस्पति उष्ण-कटिबंधीय वन हैं। ताड़, महोगनी तथा लौगवुड यहाँ के प्रमुख वृक्ष हैं।

मध्यवर्ती मैदानों के भीतरी भागों की प्राकृतिक वनस्पति घास है। उत्तर अमेरिका के शीतोष्ण अक्षांश वाले आंतरिक भागों की विस्तृत घास भूमि को प्रेअरी कहते हैं। प्रेअरी क्षेत्र की जलवायु अति विषम है, अर्थात् यहाँ सर्दियों में बहुत ठण्ड और गर्मियों में खूब गर्मी पड़ती है। इस क्षेत्र में प्रायः हल्की वर्षा गर्मियों में होती है। आजकल इस क्षेत्र में घास को साफ कर बड़े पैमाने पर गेहूँ की खेती की जाती है।

संयुक्त राज्य के धुर दक्षिण-पश्चिमी भाग तथा मेक्सिको के उत्तर-पश्चिमी क्षेत्र में गर्म पथरीले और रेतीले मरुस्थल हैं। यहाँ प्राकृतिक वनस्पति नाममात्र को ही मिलती है। नागफनी जैसे कई प्रकार के कैक्टस पौधे इस मरुस्थली क्षेत्र की सामान्य वनस्पति हैं। भयानक जंगली सूअर अर्थात् पिकारी यहाँ का मुख्य जानवर है।



फोटो XV. प्रेअरी क्षेत्र में गेहूँ की तैयार फसल

कनाडा के प्रेअरी क्षेत्र में गेहूँ के इस बड़े खेत को देखो। पहले यह भाग वृक्ष रहित घास का विस्तृत सपाट मैदान था। पीछे की ओर अनाज के ऐलिवेटरों की कतार है। इनमें गेहूँ भरा जाता है। इन ऐलिवेटरों को रेल-मार्गों के निकट क्यों बनाया जाता है?

पश्चिमी तट पर कैलिफोर्निया के आस-पास के भागों में भूमध्य-सागरीय जलवायु मिलती है। यहाँ ग्रीष्म ऋतु गर्म और शुष्क तथा शीत ऋतु मृदुल तथा आर्द्र होती है। इस प्रदेश की प्राकृतिक वनस्पति जैतून, भूमध्य-सागरीय चीड़ तथा कार्क ओक के वृक्ष हैं। इस क्षेत्र के पेड़-पौधों को ग्रीष्म ऋतु की शुष्कता से बचाव करना पड़ता है। इसलिए प्रकृति ने इन वृक्षों को लम्बी जड़ें, मोटे तने, मोटी और चमकदार पत्तियाँ तथा अत्यन्त मोटी छाल प्रदान की है जिससे उनके द्वारा वाष्प उत्सर्जन कम हो और वे शुष्क ऋतु में भी जीवित रह सकें।

प्राकृतिक संपदा

उत्तर अमेरिका सबसे समृद्धशाली तथा संसार के सबसे अधिक औद्योगिकृत महाद्वीपों में से है। इसका मुख्य कारण यह है कि इस महाद्वीप के

पास अपार प्राकृतिक संपदा है। उपजाऊ मैदान, विस्तृत घास भूमि, वनों के लम्बे-चौड़े क्षेत्र, खनिजों का बाहुल्य, जलशक्ति के अपार स्रोत तथा चारों ओर तटों पर विस्तृत मत्स्य-ग्रहण क्षेत्र उत्तर अमेरिका की मूल्यवान प्राकृतिक संपदा हैं।

कृषि संपदा—यद्यपि उत्तर अमेरिका के कुल क्षेत्रफल के लगभग बारहवें भाग पर ही खेती की जाती है, फिर भी यह महाद्वीप कृषि संपदा में बहुत धनी है। इसका मुख्य कारण यह है कि महाद्वीप के मध्यवर्ती मैदान बहुत उपजाऊ हैं और यहाँ सिंचाई के लिए पर्याप्त मात्रा में पानी मिलता है। उत्तर अमेरिका में मुख्यत: विस्तृत खेती की जाती है। यहाँ के खेत या फार्म बहुत बड़े-बड़े होते हैं और उन पर खेती का अधिकतर काम मशीनों से किया जाता है। यहाँ किसान वैज्ञानिक ढंग से खेती करते हैं। इस कारण खेती में लगी हुई बहुत थोड़ी सी जनसंख्या इतनी अधिक मात्रा में खाद्य वस्तुएँ पैदा करती है कि महाद्वीप की सारी जरूरतों के बाद भी वे निर्यात के लिए काफी बची रहती हैं। मक्का, गेहूँ, जई तथा जौ इस महाद्वीप की प्रमुख अनाज फसलें हैं। कपास, तम्बाकू, सोयाबीन तथा अलसी यहाँ की मुख्य नकदी फसलें हैं।

अमेरिका में मक्का को कार्न कहते हैं। उपजाऊ मिट्टी और गर्म जलवायु जिसमें थोड़े-थोड़े समय के अंतर पर वर्षा होती रहती हो, मक्का की अच्छी पैदावार के लिए उपयुक्त होते हैं। संसार के कुल मक्का उत्पादन का लगभग आधा से अधिक भाग मक्का, अकेला उत्तर अमेरिका प्रदान करता है। मक्का मेक्सिको के लोगों का प्रमुख भोजन है। संयुक्त राज्य अमेरिका में अधिकतर मक्का सूअरों और पशुओं को खिलाई जाती है। इस प्रकार मक्का को सूअरों और पशुओं के मांस में बदला जाता है, जो यहाँ के लोगों का प्रिय भोजन है। कनाडा तथा संयुक्त राज्य के प्रेअरी क्षेत्रों में बड़े पैमाने पर गेहूँ पैदा किया जाता है। ये दोनों देश बड़ी मात्रा में गेहूँ का निर्यात करते हैं। संसार के कुल गेहूँ उत्पादन का पाँचवाँ भाग अकेला उत्तर अमेरिका ही पैदा करता है। जौ और जई उत्तर अमेरिका की अन्य अनाज फसलें हैं। आलू भी उत्तर अमेरिका की मुख्य खाद्य फसल है।

उत्तर अमेरिका में कपास की पैदावार मुख्यत: मिसिसिपी नदी की द्रोणी के दक्षिणी भाग में की जाती है। इस क्षेत्र की मिट्टी उपजाऊ है। यहाँ

ग्रीष्म ऋतु कोष्ण रहती है और साधारण वर्षा होती है। कपास के वर्धन-काल में यहाँ पाला नहीं पड़ता। कपास की फसल के पकते और चुनते समय आसमान साफ और तेज धूप रहती है। इसलिए यह क्षेत्र कपास की पैदावार के लिए अति उत्तम है। तम्बाकू मुख्यतः संयुक्त राज्य अमेरिका में पैदा की जाती है।

लम्बे-चौड़े प्रेअरी घास-स्थलों तथा पर्वतीय चरागाहों पर बड़ी संख्या में गाय-बैल, भेड, सूअर और घोड़े पाले जाते हैं। दूध देने वाले पशुओं को अधिक वर्षा वाले क्षेत्रों में पाला जाता है, जबकि मांस प्रदान करने वाले पशुओं को अपेक्षाकृत शुष्क क्षेत्रों में पालते हैं। संसार में गाय के दूध के कुल उत्पादन का



फोटो XVI. दूध देने वाले पशु खुले चरागाहों पर

ये होल्सटीन गायें दक्षिणी-पूर्वी कनाडा के खुले चरागाहों पर चर रही हैं। दूध देने वाली प्रसिद्ध जाति की यह गाय साल मे लगभग 3200 किलोग्राम दूध देती हैं।

लगभग एक-चौथाई भाग का उत्पादन उत्तर अमेरिका में होता है। यह महाद्वीप मांस के उत्पादन में संसार में सबसे आगे है। संयुक्त राज्य अमेरिका अकेला ही संसार का लगभग 20 प्रतिशत मांस का उत्पादन करता है।

वन-संपदा—उत्तर अमेरिका की वन-संपदा विशाल है। इसके विस्तृत शंकुधारी वन मुलायम लकड़ी के बड़े स्रोत हैं। संसार में प्रतिवर्ष जितनी मलायम लकड़ी काटी जाती है उसका लगभग एक-तिहाई भाग उत्तर अमेरिका



फोटो XVII. विशाल रेडवुड वृक्ष

ये विशाल रेडवुड वृक्ष संयुक्त राज्य अमेरिका के कैलिफोर्निया के वनों में मिलते हैं। इनमें से कुछ वृक्षों की ऊँचाई 100 मीटर से अधिक और व्यास लगभग 10 मीटर तक होता है। ऐसा विश्वास किया जाता है कि इनमें से कुछ वृक्ष तो 200 वर्ष पुराने हैं। वृक्षों की उम्र किस प्रकार निकाली जाती है ?

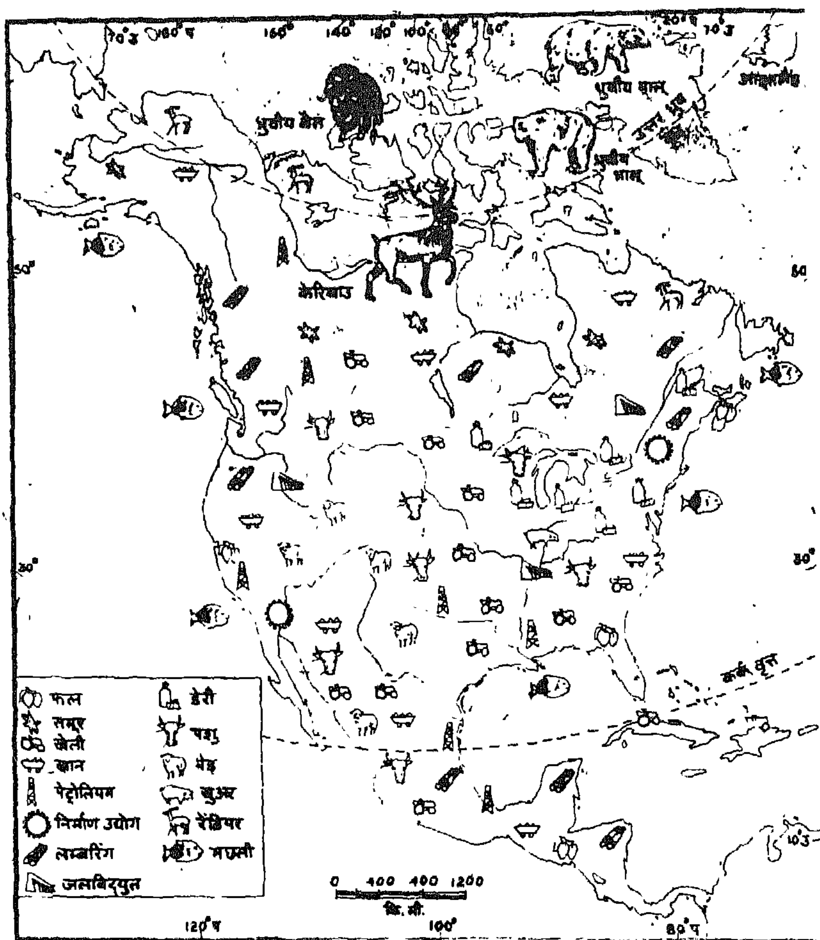
से प्राप्त होता है। डगलस फर और सफेद चीड़ की लकड़ी का उपयोग फर्श के तख्ते दरवाजे और खिड़कियों की चौखटें बनाने में होता है। शंकुधारी वृक्षों की अधिकतर लकड़ियों से लुगदी तथा कागज़ तैयार किये जाते हैं। सेलुलोस, राल तथा तारपीन भी शंकुधारी वृक्षों से प्राप्त किये जाते हैं। सेलुलोस का प्रयोग रेयन के कपड़ों को बनाने में किया जाता है।

उत्तर अमेरिका में पर्णपाती वृक्ष शंकुधारी वृक्षों के साथ-साथ शीतोष्ण कटिबंधीय भागों में उगते हैं। सफेद चीड़ और स्प्रूस से अखबारी कागज के लिए लुगदी प्राप्त होती है। बांज, बीच तथा बेंत जैसे पर्णपाती वृक्षों की लकड़ी फर्नीचर बनाने के काम आती है। मैपिल वृक्ष की छाल मीठी होती है। अत: कनाडा के लोग इससे चीनी तैयार करते हैं।

उष्ण कटिबंधी वनों से कठोर लकड़ी प्राप्त होती है। क्यूबा में महोगनी तथा देवदार वृक्षों की कठोर लकड़ी से सिगार के बक्से तैयार किए जाते हैं। अन्य वृक्षों की कठोर लकड़ी से रेल के स्लीपर बनाए जाते हैं। ब्रिटिश हाण्डूरास में चिकिल वृक्ष से 'चिकिल गम' नामक रस प्राप्त किया जाता है, इससे च्युइंगम तैयार करते हैं।

खनिज-संपदा—उत्तर अमेरिका में अनेक प्रकार के खनिज पदार्थ पाए जाते हैं। कनाडियन शील्ड में खनिजों के विशाल भंडार हैं। इनमें निकल, प्लेटिनम, जस्ता, सीसा, सोना, चाँदी तथा ताँबा प्रमुख हैं। रॉकी पर्वतों में भी अनेक खनिज मिलते हैं। अपलेशियन क्षेत्र में कोयला मिलता है। मध्यवर्ती मैदान तथा मैक्सिको की खाड़ी के तट खनिज तेल तथा प्राकृतिक गैस के लिए प्रसिद्ध हैं।

संयुक्त राज्य अमेरिका में सुपीरियर झील के आस-पास लोह-अयस्क के विशाल निक्षेप हैं। ताँबे के उत्पादन में संयुक्त राज्य का संसार में प्रथम स्थान है। संसार में जस्ते के कुल उत्पादन का एक-तिहाई भाग और निकल के उत्पादन का तीन-चौथाई भाग उत्तर अमेरिका प्रदान करता है। निकल तथा जस्ता में कनाडा बहुत प्रसिद्ध है। उत्तर अमेरिका में सोना और चाँदी के भी विशाल भंडार हैं। सोना उत्पादन में कनाडा का स्थान इस महाद्वीप में प्रथम है और चाँदी के उत्पादन में मेक्सिको का संसार में प्रथम स्थान है। संसार में चाँदी के कुल उत्पादन का लगभग आधा भाग उत्तर अमेरिका से ही प्राप्त होता है। इस



चित्र 28. उत्तर अमेरिका—भूमि उपयोग

मानचित्र में उत्तर अमेरिका की भूमि के विभिन्न उपयोग देखो। अधिकतर उद्योग महान् झीलों के चारों ओर के क्षेत्र में ही क्यों स्थित हैं ?

महाद्वीप में फास्फेट और पोटाश भी मिलते हैं। इनका उपयोग रासायनिक उवरक बनाने में होता है।

उत्तर अमेरिका में कोयला तथा खनिज-तेल के विशाल भंडार हैं। यहाँ संसार के कुल उत्पादन का लगभग एक-चौथाई कोयला और एक-तिहाई खनिज तेल निकाला जाता है। संयुक्त राज्य अमेरिका में प्राकृतिक गैस सबसे अधिक मात्रा में निकाली जाती है।

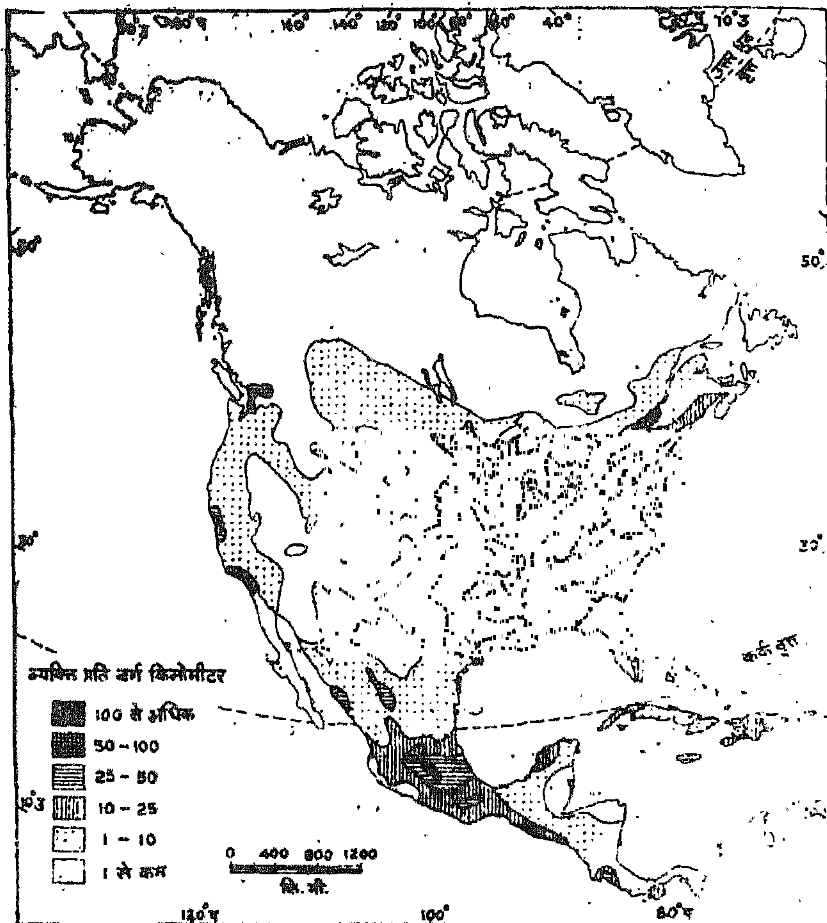
उत्तर अमेरिका जलशक्ति के साधनों में भी बहुत धनी है। यहाँ जलविद्युत बड़े पैमाने पर तैयार की जाती है। सेंट लारेंस नदी, अपलेशियन क्षेत्र तथा टेनेसी, कोलोरैडो तथा कोलम्बिया नदिया की घाटियों में जलविद्युत तैयार करने के लिए कई आदर्श स्थान हैं। उत्तर अमेरिका का न्यागरा प्रपात जलशक्ति का बहुत बड़ा साधन है।

मत्स्य संपदा—उत्तर अमेरिका के चारों ओर फैले हुए महासागरों में प्रचुर मात्रा में मछलियाँ मिलती हैं। महाद्वीप के उत्तरी-पूर्वी भागों के आस-पास का समुद्र उथला है और यहाँ मछलियाँ प्रचुरता में पाई जाती हैं। ऐसे तटवर्ती उथले समुद्र के विशाल क्षेत्र जहाँ मछलियाँ अधिकता से मिलती हैं, बैंक या **मत्स्य-ग्रहण क्षेत्र** कहलाते हैं। न्यूफाउंडलैंड के तट के निकट 'ग्रांड बैंक' नाम का मत्स्य-ग्रहण क्षेत्र संसार भर में प्रसिद्ध है।

जनसंख्या तथा यातायात

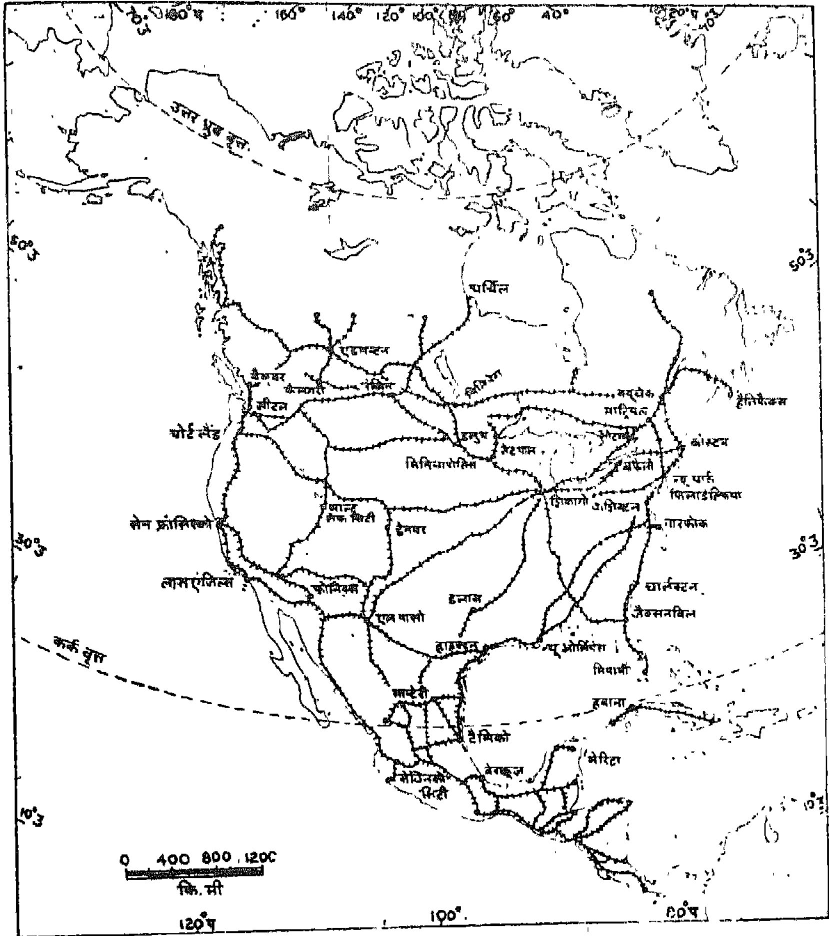
उत्तर अमेरिका की कुल जनसंख्या लगभग 34 करोड़ है और यहाँ जनसंख्या का औसत घनत्व 14 व्यक्ति प्रति वर्ग किलोमीटर है।

उत्तर अमेरिका के जनसंख्या वाले मानचित्र का (चित्र 29) अध्ययन करो। तुम देखोगे कि महाद्वीप के उत्तरी भाग पश्चिमी कार्डिलेरा, मरुस्थलीय भागों और मध्यवर्ती मैदान के अधिकतर भागों में जनसंख्या बहुत ही विरल है। इन क्षेत्रों की जनसंख्या कम होने के क्या कारण हैं? उत्तर अमेरिका में सबसे घनी जनसंख्या उत्तर-पूर्वी तटीय भागों और महान् झीलों के चारों ओर के क्षेत्रों में है। महाद्वीप के अधिकतर नगर इन्हीं क्षेत्रों में स्थित हैं। इन क्षेत्रों की जनसंख्या घनी क्यों है?



चित्र 29. उत्तर अमेरिका—जनसंख्या का घनत्व

मानचित्र में उत्तर अमेरिका के घने आबाद क्षेत्रों को देखो। इन क्षेत्रों में घनी जनसंख्या क्यों है?



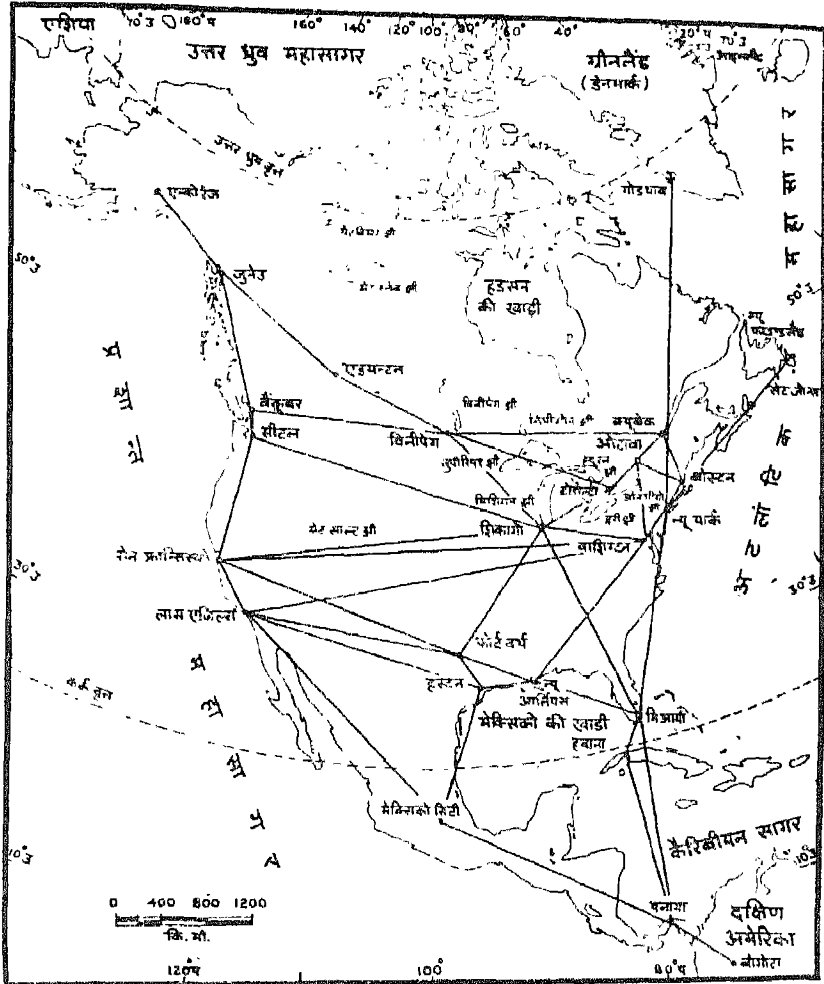
चित्र 30. उत्तर अमेरिका—रेलमार्ग

उत्तर अमेरिका में रेल मार्ग के घने जाल को देखो। किस भाग में यह जाल बहुत घना है और क्यों?

स्थल यातायात—उत्तर अमेरिका में यातायात के बहुत ही अच्छे साधन हैं। कनाडा के दक्षिणी भाग और संयुक्त राज्य अमेरिका के लगभग सभी क्षेत्रों में अनेक अच्छी सड़कें तथा महामार्ग हैं। अधिकतर लोगों के पास अपनी निजी मोटरगाड़ियाँ हैं। इस महाद्वीप में दैनिक यातायात के लिए मोटरगाड़ियाँ सबसे लोकप्रिय साधन हैं। संयुक्त राज्य अमेरिका के आधे पूर्वी भाग में रेलमार्गों का घना जाल है। तुम्हारी राय में इसका क्या कारण हो सकता है ? कनाडा तथा सयुक्त राज्य अमेरिका में कई अंतमहाद्वीपीय रेलमार्ग हैं।

जल यातायात—उत्तर अमेरिका में कई अच्छे पत्तन हैं। उनमें से अधिकतर पत्तन अटलांटिक महासागर के तट पर स्थित हैं। मानचित्र से कुछ प्रमुख पत्तनों के नाम ज्ञात करो। तटीय जलमार्गों और अंतःस्थलीय जल यातायात द्वारा महाद्वीप का बहुत अधिक देशीय व्यापार होता है। मिसीसिपी तथा सेंट लारेंस नदियाँ नौसंचालन के लिए प्रसिद्ध हैं। सेंट लारेंस नदी तथा पाँच झीलें मिलकर संसार का अत्यंत व्यस्त अंतःस्थलीय जलमार्ग बनाते हैं। पनामा नहर पनामा देश में स्थित है और यह दो बड़े महासागरों अटलांटिक और प्रशान्त महासागर को मिलाती है। यह व्यापारिक तथा सैनिक दृष्टि से बहुत ही महत्वपूर्ण है। पनामा नहर द्वारा यात्रा करने से हार्न अंतरीप से होकर लंबी और कष्टदायक यात्रा से बचाव हो जाता है। इस नहर द्वारा यात्रा करने से पूर्वी तट पर स्थित न्यूयार्क नगर और पश्चिमी तट पर स्थित सेनफ्रांसिस्को नगर के बीच समुद्र से यात्रा करने में 13640 किलोमीटर दूरी की बचत हुई है।

वायु यातायात—उत्तर अमेरिका के लगभग सभी बड़े नगर वायुमार्गों द्वारा जुड़े हुए हैं। महाद्वीप में इस समय नौ हजार से भी अधिक वायु पत्तन हैं। न्यूयार्क का कैनेडी हवाई अड्डा संसार का सबसे व्यस्त अंतर्राष्ट्रीय वायु पत्तन है।



चित्र 31. उत्तर अमेरिका—वायु यातायात
उत्तर अमेरिका के प्रमुख वायुमार्गों को देखो।

नवीन पारिभाषिक शब्द जो तुमने इस पाठ में पढ़े : कैनियन—नदी द्वारा कटा हुआ लंबा और बहुत गहरा महाखड्ड जिसके किनारे दीवार के समान होते हैं। **मत्स्य-ग्रहण-क्षेत्र**—तट के निकट उथले समुद्रों के बड़े-बड़े क्षेत्र जहाँ मछलियाँ बहुत अधिक मात्रा में मिलती हैं।

स्वाध्याय

पुनर्विचार

1. नीचे दिए प्रश्नों के संक्षिप्त उत्तर दो :
   (1) उत्तर अमेरिका की पाँच महान् झीलों के नाम बताओ।
   (2) वे कौन-सी चार महासागर धाराएँ हैं, जो उत्तर अमेरिका की जलवायु को प्रभावित करती हैं ?
   (3) उत्तर अमेरिका की प्रमुख अनाज फसलें कौन-सी हैं ?
   (4) उत्तर अमेरिका के पाँच मुख्य खनिजों के नाम बताओ।
   (5) उत्तर अमेरिका के किन भागों में रेलमार्गों का घना जाल बिछा है ?
2. निम्नलिखित प्रत्येक के लिए एक पारिभाषिक शब्द दो :
   (1) खेती करने का एक ढंग जिसमें केवल थोड़े से किसान बड़े-बड़े खेतों पर प्रायः मशीनों से खेती करते हैं।
   (2) तट के समीप उथले समुद्र के विशाल क्षेत्र जहाँ मछलियाँ प्रचुर मात्रा में मिलती हैं।
   (3) उत्तर अमेरिका के भीतरी भागों में स्थित शीतोष्ण घास-भूमि का विशाल क्षेत्र।
3. गोर्ज (महाखड्ड) तथा कैनियन में अंतर स्पष्ट करो।
4. उत्तर अमेरिका को तीन मुख्य भौतिक भागों में बाँटो तथा बताओ कि ये भाग एक-दूसरे से किस प्रकार भिन्न हैं ?
5. उत्तर अमेरिका की प्राकृतिक वनस्पति की सात प्रमुख पेटियों के नाम बताओ। किन्हीं तीन पेटियों के बारे में लिखो कि उनकी वनस्पति किस प्रकार वहाँ की जलवायु पर आधारित है ?

6. उत्तर अमेरिका की तीन फसलों के विषय में संक्षेप में लिखो। प्रत्येक फसल के लिये अनुकूल जलवायु के बारे में भी बताओ।
7. उत्तर अमेरिका के कौन-से भाग घने आबाद हैं, और क्यों ?

चित्र अध्ययन

8. फोटोग्राफ XVI, XVII और XIX का ध्यानपूर्वक अध्ययन करो और बताओ कि भूमि को किन तीन ढंगों से प्रयोग किया जाता है ? क्या तुम भूमि का किसी अन्य तरीके से भी उपयोग बता सकते हो ?

मानचित्र कार्य

9. एटलस में दिये उत्तर अमेरिका के मानचित्र में निम्नलिखित ढूंढो :
   (1) पर्वत : रॉकीज़ श्रेणी तथा सेरानिवादा
   (2) नदियाँ : कोलोरैडो तथा रियोग्रेंडे
   (3) अंतःस्थलीय जल मार्ग : सेंट लारेंस जलमार्ग तथा पनामा नहर
   (4) देश : क्यूबा, ग्वाटेमाला तथा जमैका
   (5) नगर : संयुक्त राज्य अमेरिका तथा कनाडा की राजधानियाँ।

विचार-विमर्श

10. "पनामा नहर तथा स्वेज नहर"

कक्षा को दो समूहों में बाँटो। एक समूह पनामा नहर और दूसरा स्वेज नहर की स्थिति, लम्बाई, चौड़ाई, गहराई, तल, निर्माण वर्ष, प्रतिदिन गुजरने वाले जहाजों की संख्या तथा इन नहरों से लाभ उठाने वाले देशों के नामों के विषय में बातचीत करें। अंत में दोनों नहरों में पाई जाने वाली समानताओं और असमानताओं की सूची तैयार करें।

9

कनाडा

> पारिभाषिक शब्द जो तुम जानते हो : दंतुरित तटरेखा—कटी-फटी तट रेखा जिसमें अनेक खाड़ियाँ तथा अंतरीप होते हैं।

कनाडा सोवियत संघ के बाद संसार का सबसे बड़ा देश है। यह पूर्व में अटलांटिक महासागर से लेकर पश्चिम में प्रशान्त महासागर तक फैला है। इसका विस्तार दक्षिण में संयुक्त राज्य अमेरिका की सीमा से लेकर उत्तर में आर्कटिक वृत्त के भीतर काफी दूरी तक है। कनाडा के मानचित्र को देखकर इसकी स्थिति अक्षांशों और देशान्तरों में मालूम करो। कनाडा के उत्तरी भाग में कई छोटे-बड़े द्वीप हैं। इन द्वीपों के नाम मानचित्र से पढ़ो। कनाडा की तटरेखा बहुत ही दंतुरित है।

भौतिक लक्षण

कनाडा के भौतिक लक्षणों में सबसे प्रमुख लक्षण यहाँ की कनाडियन शील्ड है। साइबेरिया के समान यह पुरानी चट्टानों का बना एक नीचा पठारी क्षेत्र है। इसके अधिकांश क्षेत्र पर झीलें तथा दलदल हैं। इसका उत्तरी भाग हिम और बर्फ से ढका रहता है। इसके दक्षिण में शंकुधारी वन हैं। कनाडियन शील्ड की सतह के नीचे धात्विक खनिजों के विशाल निक्षेप हैं। शील्ड के दक्षिण तथा दक्षिण-पूर्व में महान् झीलें तथा सेंट लारेंस नदी की निम्न भूमि है। इस क्षेत्र के अधिक भाग पर खेती होती है।

कनाडियन शील्ड के पूर्व में लेब्रेडोर प्रायःद्वीप का पठार या उच्च भूमि प्रदेश है। यह वास्तव में अपलेशियन पर्वतों का ही विस्तार है। कनाडियन शील्ड के दक्षिण-पश्चिम की ओर जो मध्यवर्ती मैदान हैं, उन्हें प्रेअरी कहते हैं। यह मैदान प्रायः सपाट है और रॉकी पर्वतों की ओर इनकी ऊँचाई बढ़ती जाती है। कनाडा का अधिकांश गेहूँ इसी क्षेत्र में उगाया जाता है। कनाडा के पश्चिमी क्षेत्र में रॉकी पर्वत, उच्च पठार तथा तटीय पर्वत श्रेणियाँ हैं।

कनाडा की सबसे प्रमुख नदी सेंट लारेन्स है। यह महान् झीलों से निकल कर अटलांटिक महासागर में जाकर गिरती है। यह संसार का अत्यन्त व्यस्त अन्तःस्थलीय जलमार्ग का काम करती है। मानचित्र में मेकेन्ज़ी नदी को ढूंढ़ो। कनाडा की कौन-सी नदियाँ प्रशान्त महासागर में गिरने से पूर्व संयुक्त राज्य अमेरिका में होकर बहती हैं।

जलवायु तथा वनस्पति

कनाडा का अधिक भाग 50° उत्तरी अक्षांश के उत्तर में है। यहाँ ग्रीष्म ऋतु छोटी तथा शीतल होती है। परन्तु यहाँ की शीत ऋतु बहुत लम्बी और अत्यन्त ठण्डी होती है। देश की दक्षिणी सीमा पर भी शीत ऋतु सात महीने तक लम्बी होती है। अतः दक्षिणी भाग में भी वर्धन काल बहुत छोटा होता है।

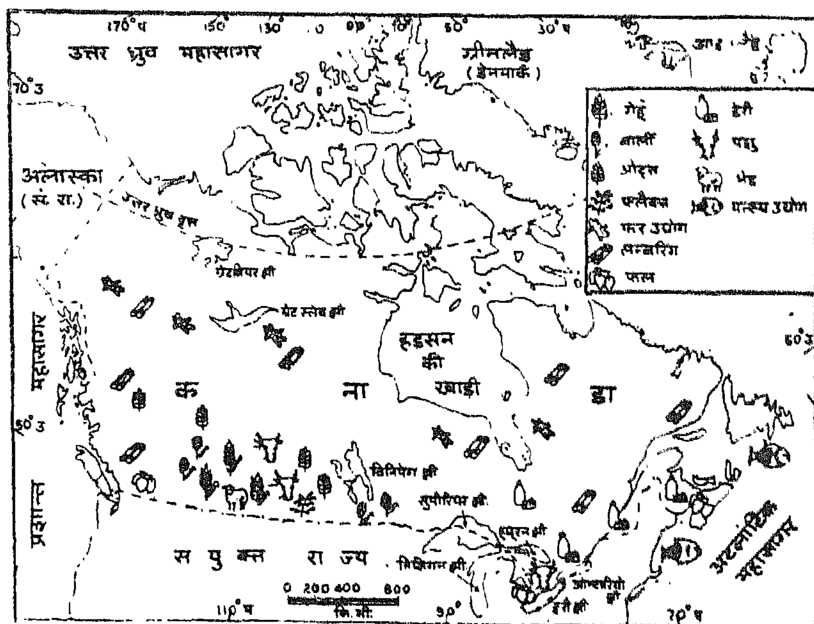
कनाडा के उत्तरी भाग में शीत ऋतु के दिनों में बहुत तेज तथा अत्यन्त ठण्डी पवनें चला करती हैं। इन पवनों के साथ भारी हिमपात होता है। हिमपात इतना घना होता है कि थोड़ी दूर की वस्तु भी दिखाई नहीं देती। इस प्रकार तीखी शीत पवनों के साथ होने वाले हिमपात को बर्फानी तूफान कहते हैं। शीत ऋतु में बर्फानी तूफान ध्रुवीय तथा अर्धो-ध्रुवीय क्षेत्रों में सामान्यतः आते रहते हैं। कनाडा के प्रशान्त महासागर के तट पर ग्रीष्म ऋतु शीतल और शीत ऋतु मृदुल अनुभव की जाती है। यह तटीय क्षेत्र गर्म उत्तर प्रशान्त प्रवाह के कारण कोष्ण रहता है। इसके अतिरिक्त यह क्षेत्र वर्षा करने वाली पछुआ पवनों के प्रभाव में आता है।

कनाडा की प्रमुख वनस्पति पेटियां टुण्ड्रा, टैगा तथा प्रेअरी हैं। टुण्ड्रा वनस्पति क्षेत्र कनाडा का लगभग एक-चौथाई भाग घेरे हुए है। इस क्षेत्र की

सामान्य वनस्पति क्या है ? टुण्ड्रा प्रदेश के दक्षिण में टैगा अर्थात् शंकुधारी वनों की एक विशाल पेटी है। यह कनाडा के सम्पूर्ण क्षेत्रफल का लगभग 40 प्रतिशत भाग घेरे हुए है। यह क्षेत्र भारत के कुल क्षेत्रफल से भी बड़ा है। शंकुधारी वनों के सामान्य वृक्ष कौन-कौन से हैं ? प्रेअरी के घास-स्थल रॉकी पर्वतों से लेकर सुपीरियर झील तक फैले हुए हैं। इनके अधिकतर भागों से घास साफ़ कर अब यहाँ गेहूँ की खेती बड़े पैमाने पर की जाती है।

आर्थिक विकास

खेती करना, लकड़ी काटना, मछली पकड़ना, खनन तथा वस्तु-निर्माण कनाडा के प्रमुख व्यवसाय हैं।



चित्र 32. कनाडा—वन-व्यवसाय तथा खेती

मानचित्र में कनाडा में फसलों का वितरण तथा पशुपालन क्षेत्रों को देखो। कनाडा का अधिकतर भाग खेती के लिए उपयुक्त क्यों नहीं है ?

खेती करना—कनाडा का लगभग आधा भाग वीरान है। कुल क्षेत्र का लगभग 40 प्रतिशत भाग वनों से ढका है। शेष 10 प्रतिशत भाग पर चरागाह और खेती की भूमि है। इस पर भी कनाडा संसार में गेहूँ का सबसे अधिक निर्यात करता है। यहाँ की अन्य फसलें जई और जौ हैं। कनाडा में यांत्रिक ढंग से खेती की जाती है, जिसमें थोड़े से लोग बड़े-बड़े खेतों पर काम करके अधिक पैदावार प्राप्त करते हैं। नोवा-स्कोशिया में सेब के बड़े-बड़े बाग हैं। यह क्षेत्र सबसे अधिक मात्रा में सेब का उत्पादन करता है।



फोटो XVIII. सेब चुनना

कनाडा के नोवा-स्कोशिया के फलों के एक भाग में ये सेब चुने गए हैं। देखो यह आदमी सेबों से भरी टोकरी को लकड़ी की पेटी में किस प्रकार खाली कर रहा है।

प्रेअरी क्षेत्र के शुष्क भागों में विशेषकर रॉकी पर्वतों को ओर पशुपालन महत्वपूर्ण व्यवसाय है। कनाडा में मांस का उत्पादन इतनी अधिक मात्रा में होता है कि स्थानीय आवश्यकता को पूरा करने के बाद भी निर्यात के लिए बहुत-सा मांस बचा रहता है। सेंट लारेंस नदी की घाटी और महान् झीलों के आसपास के क्षेत्र में पशुओं को मुख्यतः दूध और उससे बनी विभिन्न प्रकार की वस्तुएँ प्राप्त करने के लिए पाला जाता है।

वनों में लकड़ी काटना—कनाडा के शंकुधारी वन मुलायम लकड़ी के लिए प्रसिद्ध हैं। इन वनों में काम करने वाले लोग या लंबरजेक पेड़ों को गिराने के अलावा उन्हें काट-छाँट कर लट्ठे बनाने, लट्ठों को पानी में बहाने और उन्हें इधर-उधर ढोने का काम भी करते हैं। वनों में की जाने वाली ऐसी क्रियाओं को सामूहिक रूप में **लंबरिंग या लकड़ी काटना** कहते हैं। इन वनों की लकड़ी से मुख्यतः लुगदी बनाई जाती है जिससे कागज़ तैयार किया जाता है।

लकड़ी काटने वाले मजदूर या लंबरजेक लकड़ी काटने के स्थलों पर शीत ऋतु में लट्ठों से बनी झोंपड़ी में रहते हैं। जब वृक्ष पूरी तरह बढ़ जाते हैं, तो उनको गिराया जाता है और घसीटकर पास की जमी हुई नदी पर ले जाया जाता है। बसंत ऋतु के अंतिम दिनों तक लट्ठे वहीं पड़े रहते हैं। ग्रीष्म ऋतु में जब बर्फ पिघलती है, तब लट्ठे नदियों में बहकर आरा मिलों की ओर चले जाते हैं। लकड़ी काटने के क्षेत्र से हजारों लट्ठों को एक साथ बाँधकर मिलों की ओर बहाया जाता है। वहाँ इनसे कागज तथा अन्य उपयोगी वस्तुएँ बनाई जाती हैं।

कनाडा के वनों में अनेक प्रकार के समूरधारी जानवर मिलते हैं। इस देश के बहुत से लोग इन समूरधारी जानवरों को पकड़ने के व्यवसाय में लगे हुए हैं। इन जानवरों को शीत ऋतु में पकड़ा जाता है क्योंकि उस समय उनके समूर पूर्णतया विकसित होते हैं। शीत ऋतु में जानवरों को पकड़ने वाले लोग वनों में चले जाते हैं। वहाँ वे लोग तम्बू अथवा लट्ठों से बनी झोंपड़ियों में रहते हैं। वे बर्फ पर जानवरों के पैरों के निशान देख कर उन मार्गों पर जाल लगा देते हैं। कुछ दिनों बाद वे एक जाल से दूसरे जाल को देखते जाते हैं। इस प्रकार सभी जालों को देखने, उनमें फंसे जानवरों को निकालने तथा जालों

को पुनः लगाने में उन्हें कई दिन लग जाते हैं। सभी जालों का एक चक्कर पूरा करने के बाद वे अपने डेरों में लौट आते हैं। डेरों पर उनके परिवार के लोग जानवरों की खालों को संवारने में जुटे रहते हैं। आजकल समूर वाले जानवरों को पालने के लिए विशेष फार्म स्थापित किए गए हैं। समूर तथा समूर के बने वस्त्रों के निर्यात से कनाडा को बहुत अधिक आमदनी होती है।

मछली पकड़ना—कनाडा में हज़ारों लोग मछली पकड़ने के व्यवसाय में लगे हुए हैं। यह व्यवसाय न्यूफाउंडलैंड में अधिक महत्वपूर्ण है। कनाडा में मछलियों की कुल वार्षिक पकड़ का 90 प्रतिशत भाग निर्यात कर दिया जाता है। पूर्वी तट पर पकड़ी जाने वाली मछलियों में कॉड प्रमुख हैं तथा पश्चिमी तट पर सामन। यहां बड़ी संख्या में ताजी मछलियों की खपत हो जाती है। शेष मछलियों को बर्फ में दबाकर या ठण्डा रख कर, नमक लगा कर, सुखा कर, धुआं देकर या डिब्बों में बंद करके खाने योग्य बनाए रखने के लिए सुरक्षित रखा जाता है। इन भिन्न-भिन्न तरीकों से खाने योग्य तैयार की गई मछलियों का स्वाद अलग-अलग होता है। मछली के तेल से विटामिन तथा अन्य पौष्टिक पदार्थ प्राप्त होते हैं। मछलियों की सफाई से बचे पदार्थों से उर्वरक बनाए जाते हैं।

खनन—कनाडा खनिज साधनों में भी बहुत धनी है। यहाँ बहुत से लोग खनन व्यवसाय में लगे हुए हैं। कनाडा में संसार का सबसे अधिक ऐस्बेस्टस निकाला जाता है। यह रेशेदार खनिज है जिस पर आग का बिल्कुल प्रभाव नहीं होता। निकल तथा प्लैटिनम के उत्पादन में भी कनाडा का स्थान संसार में सबसे आगे है। जस्ता, कोबाल्ट और मैंगनीज के उत्पादन में कनाडा का दूसरा स्थान है। सोना और चाँदी के उत्पादन में यह तीसरे स्थान पर आता है। यहाँ लोह-अयस्क, तांबा तथा सीसा भी पर्याप्त मात्रा में निकाले जाते हैं।

कनाडा में खनिज ईंधनों के अंतर्गत कोयला, खनिज तेल, प्राकृतिक गैस तथा यूरेनियम निकाले जाते हैं। प्राकृतिक गैस के उत्पादन में कनाडा का संसार में तीसरा स्थान है। यह देश यूरेनियम से ऊर्जा का उत्पादन करता है।

कनाडा में जलशक्ति के साधनों की भी अधिकता है। जलशक्ति के विकास में कनाडा का संसार में दूसरा स्थान है। कनाडा की बहुत-सी नदियों एवं सरिताओं को जलविद्युत उत्पन्न करने के लिए प्रयोग किया जा रहा है।



फोटो XIX. कनाडा में ऐस्बेस्टस की खान

यह विशाल शावल क्रेन द्वारा चलता है। यह मशीन इस धरातलीय खान से ऐस्बेस्टस उठा कर ट्रक में भर रही है। धरातलीय खान किसे कहते हैं ?

न्यागर-प्रपात कनाडा तथा संयुक्त राज्य अमेरिका दोनों देशों के लिए जलविद्युत का महत्वपूर्ण साधन है। आज जलशक्ति के विकास के ही कारण कनाडा संसार के महान् औद्योगिक देशों में गिना जाता है।

निर्माण उद्योग--कनाडा की एक-तिहाई जनसंख्या विभिन्न प्रकार के निर्माण उद्योगों पर निर्भर है। लुगदी तथा कागज़ बनाना कनाडा का सबसे बड़ा उद्योग है। कनाडा संसार में सबसे अधिक मात्रा में अखबारी कागज़ का उत्पादन करता है । प्रत्येक शीत ऋतु में लाखों वृक्ष काटे जाते हैं। ये वृक्ष

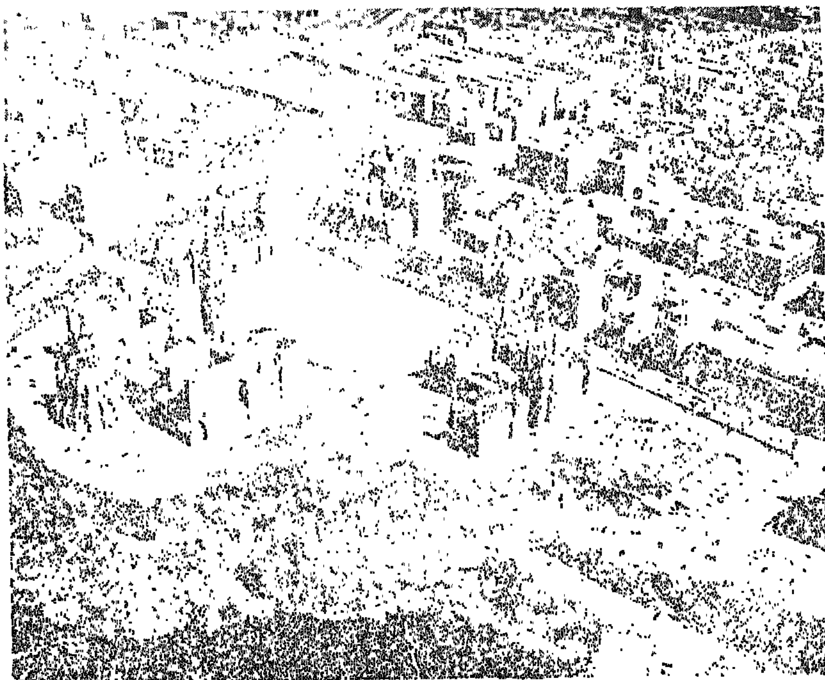
ही इस उद्योग के लिए कच्चा माल हैं। लुगदी तथा कागज उद्योग कनाडा में कुल पैदा की गई जलविद्युत का एक-तिहाई भाग खपा लेते हैं। कनाडा अखबारी कागज तथा लुगदी का बहुत बड़ी मात्रा में निर्यात भी करता है।

चित्र 33. कनाडा खनिज तथा उद्योग
कनाडा में प्रमुख खनिजों एवं उद्योगों का वितरण देखो।

धातुओं को पिघलाना और उन्हें साफ करना कनाडा का दूसरा महत्वपूर्ण उद्योग है। इस उद्योग में तांबा, निकल, सीसा, जस्ता, यूरेनियम, सोना तथा चाँदी को उनके अयस्कों से अलग किया जाता है। यह वह क्रिया है जिसके द्वारा धातुओं को उनके अयस्कों से अलग करते हैं और इस क्रिया को प्रगलन कहा जाता है। कनाडा में बाक्साइट नहीं मिलता, इसे आयात करना पडता है। इस खनिज से सस्ती जलविद्युत द्वारा अलुमिनियम तैयार किया

जाता है । इस प्रकार तैयार किए गए अलुमिनियम का अधिक भाग निर्यात कर दिया जाता है ।

कनाडा में आजकल मोटरगाड़ियाँ, यातायात के उपस्कर, विद्युत् सम्बन्धी तथा विभिन्न प्रकार की अन्य मशीनें बनाई जाती हैं । यहाँ रसायन तथा पैट्रोलियम सम्बन्धी अनेक वस्तुएँ भी तैयार की जाती हैं । कनाडा में अधिकतर उद्योग महान् झीलों के चारों ओर स्थित हैं । मॉंट्रियल कनाडा का सबसे बड़ा नगर तथा मुख्य व्यापारिक और औद्योगिक केंद्र है ।



फोटो XX. ओटावा—कनाडा की राजधानी

फोटोग्राफ में आगे की ओर कनाडा का संसद भवन तथा अन्य सरकारी इमारतें हैं । चित्र में देखो कि यह नगर ओटावा नदी के किनारे पर स्थित है ।

जनसंख्या

कनाडा का क्षेत्रफल भारत के क्षेत्रफल से तीन गुना है। परन्तु इस की जनसंख्या केवल 2 करोड़ 30 लाख है। यह जनसंख्या हमारे देश के गुजरात राज्य की जनसंख्या से भी कम है। कनाडा में जनसंख्या का वितरण बहुत ही असमान है। देश की लगभग 80 प्रतिशत जनसंख्या कनाडा की दक्षिणी सीमा के साथ 300 किलोमीटर से भी कम चौड़ी पट्टी में रहती है। कनाडा में जनसंख्या का औसत घनत्व 2 व्यक्ति प्रति वर्ग किलोमीटर है। यहाँ अधिकतर लोग नगरों में रहते हैं। मॉंट्रियल कनाडा का सबसे बड़ा नगर है और ओटावा यहाँ की राजधानी है। टोरन्टो, वैंकूवर, विनिपेग तथा हैमिल्टन कनाडा के अन्य प्रमुख नगर हैं।

यातायात

कनाडा में यातायात के मुख्य साधन रेलमार्ग हैं। यहाँ के दो अंतर्महाद्वीपीय रेलमार्गों के कारण ही प्रेअरी क्षेत्र आबाद हो सका और यहाँ बड़े पैमाने पर कृषि संभव हो सकी है। इन रेलमार्गों में एक का नाम कनाडियन पैसिफिक रेलवे है। यह न्यूब्रूंसविक में सेंट जोन से लेकर प्रशान्त तट पर वैंकूवर को मिलाता है। दूसरा रेलमार्ग कनाडियन नेशनल रेलवे है। यह नोवास्कोशिया में स्थित हैलिफैक्स नगर से ब्रिटिश कोलम्बिया के प्रिन्सरूपर्ट नगर तक जाता है। मानचित्र में ध्यान से देखो कि ये दोनों मार्ग कनाडा के दक्षिणी भाग से होकर देश के एक तट से दूसरे तट तक जाते हैं।

आजकल कनाडा में मोटरगाड़ियाँ भी यातायात का महत्वपूर्ण साधन बन गई हैं। देश में कई राष्ट्रीय महामार्ग हैं। सेंट लारेंस की निम्न भूमि तथा महान् झीलों के चारों ओर औद्योगिक क्षेत्र में अच्छी सड़कों का घना जाल बिछा है। महान झीलें तथा सेंट लारेंस नदी स्टीमरों और जहाजों के लिए बहुत ही सुगम जलमार्ग प्रदान करते हैं।

कनाडा में वायुमार्ग के साधन दिनों-दिन बढ़ते जा रहे हैं। इनका विकास विशेषतया उत्तरी भागों में अधिक हुआ है, क्योंकि वहाँ यातायात के अन्य साधन उपलब्ध कराना संभव नहीं है। कनाडा के सभी मुख्य नगर नियमित रूप से प्रतिदिन चलने वाली वायु सेवा से जुड़े हुए हैं। हवाई जहाज खनन केन्द्रों तथा समूर निर्यात करने वाले केन्द्रों से सम्बन्ध स्थापित रखने में अत्यन्त लाभ-

कारी हैं। कनाडा के उत्तरी भाग में वायुयान अनेक स्थानों पर नीचे उतरने अथवा ऊपर उड़ने के लिये प्राय: झीलों और नदियों का प्रयोग करते हैं क्योंकि ये इन क्षेत्रों में बहुत अधिक हैं। शीत ऋतु में हवाई जहाजों से उतरने के लिए पहियों के स्थानों पर स्कीपद लगा देते हैं। इनकी सहायता से वे बर्फ से जमी हुई झीलों तथा नदियों पर आसानी से उतर सकते हैं। ग्रीष्म ऋतु में झीलों, खाड़ियों और नदियों में उतरने के लिए उनमें प्लावमान पदों को लगा देते हैं।

> नवीन पारिभाषिक शब्द जो तुमने इस पाठ में पढ़े : बर्फानी तूफान— तीखी शीत पवनों के साथ होने वाला भारी हिमपात। लम्बरिंग या लकड़ी काटना— वनों में होने वाली विभिन्न क्रियायें जिनमें पेड़ काटना, लट्ठे बनाना, उन्हें ढोना और नदियों में बहाना आदि सम्मिलित हैं।

स्वाध्याय

पुनर्विचार

1. निम्नलिखित प्रश्नों के संक्षेप में उत्तर दो :
   - (क) कनाडा का सबसे प्रमुख भौतिक लक्षण क्या है ?
   - (ख) कनाडा में सेंट लारेंस नदी की निम्न भूमि तथा महान् झीलों के चारों ओर का क्षेत्र क्यों अधिक महत्वपूर्ण है ?
   - (ग) कनाडा के वनों में लकड़ी काटने का काम विशेषतया शीत ऋतु में ही क्यों होता है ?
   - (घ) कनाडा के पश्चिमी तट की जलवायु मृदुल क्यों है ?
   - (ङ) कनाडा के उत्तरी भागों में हवाई जहाज नीचे उतरने और ऊपर चढ़ने के लिए अधिकतर झीलों तथा नदियों का ही क्यों प्रयोग करते हैं ?
2. नीचे लिखे प्रत्येक कथन के लिए एक पारिभाषिक शब्द दो :
   - (क) वनों में होने वाली विभिन्न क्रियाओं जैसे पेड़ काटना, लट्ठे बनाना, उन्हें ढोना, नदियों में उन्हें बहाना आदि का सामूहिक नाम।

(ख) वह प्रक्रिया जिसके द्वारा धातुओं को उनके अयस्कों से अलग किया जाता है ।

3. कनाडा में समूर वाले जानवरों को पकड़ने में जो लोग लगे हुए हैं उनके जीवन के बारे में संक्षेप में लिखो ।

4. कनाडा के प्रमुख खनिज तथा शक्ति के साधन कौन-कौन से हैं तथा वे कहाँ पाये जाते हैं ?

चित्र-अध्ययन

5. फोटोग्राफ XIV और XV में दो भिन्न-भिन्न प्राकृतिक प्रदेश दिखाये गए हैं । इन दोनों की भूमि, प्राकृतिक वनस्पति, तापमान, वर्षा, वर्धन काल तथा जीविका के साधनों में क्या अन्तर है ?

मानचित्र-कार्य

6. कनाडा के मानचित्र पर फसलों, खनिजों, उद्योगों का वितरण तथा रेलमार्ग दिखाओ ।

विचार-विमर्श

7. "कनाडा के प्राकृतिक साधन तथा उनका उपयोग"

इस विषय पर जानकारी इकट्ठी करो तथा कक्षा में बातचीत करो कि कनाडा किन कारणों से बहुत धनी देश बन गया है ।

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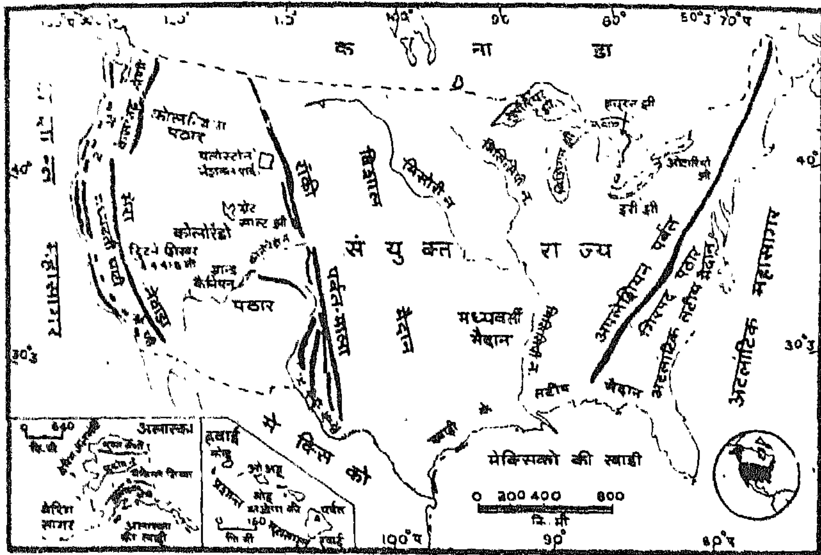
संयुक्त राज्य अमेरिका

पारिभाषिक शब्द जो तुम जानते हो : राष्ट्रीय पार्क—वह रक्षित क्षेत्र, जहाँ प्राकृतिक वनस्पति, प्राकृतिक सुन्दरता, तथा वन्य प्राणियों को सुरक्षित रखा जाता है। **स्काईस्क्रेपर या गगनचुम्बी भवन**—कई मंजिलों वाली अत्यधिक ऊँची इमारतें ।

संयुक्त राज्य अमेरिका संसार के बहुत ही महत्वपूर्ण देशों में से एक है। यह देश 50 राज्यों से मिलकर बना है। इसके 48 राज्यों की सीमाएँ एक-दूसरे से मिली हुई हैं। परन्तु अलास्का तथा हवाई दो राज्य ऐसे हैं जो अन्य राज्यों से दूर हैं। अलास्का राज्य उत्तर अमेरिका महाद्वीप के उत्तरी-पश्चिमी भाग में स्थित है और हवाई प्रशान्त महासागर में द्वीपों का एक समूह है। चित्र संख्या 34 में दिए संयुक्त राज्य अमेरिका के मानचित्र को देखो। देश के दोनों ओर स्थित महासागरों के नाम बताओ। संयुक्त राज्य के साथ किन दो देशों की सीमाएँ मिलती हैं? इस देश की मुख्य भूमि की स्थिति अक्षांशों और देशांतरों में बताओ। क्षेत्रफल में संयुक्त राज्य अमेरिका का संसार में चौथा स्थान है और यह भारत से लगभग तीन गुना बड़ा है।

भौतिक लक्षण

संयुक्त राज्य अमेरिका के तीन प्रमुख भौतिक लक्षण पश्चिमी कार्डिलेरा, मध्यवर्ती विशाल मैदान तथा पूर्वी उच्च भूमि हैं। पश्चिमी कार्डिलेरा के अंतर्गत



चित्र 34. संयुक्त राज्य अमेरिका—भौतिक लक्षण

इस मानचित्र की तुलना उत्तर अमेरिका के भौतिक लक्षण दिखाने वाले मानचित्र से करो। इन दोनों में तुम कौन-कौन से समान भौतिक लक्षण देखते हो ?

देश का लगभग एक-तिहाई भाग आता है। इसमें कुछ समानान्तर पर्वत श्रेणियाँ शामिल हैं जो उत्तर से दक्षिण की ओर फैली हुई हैं। इनमें सबसे ऊँची पर्वत श्रेणियाँ रॉकी पर्वत हैं जो पश्चिमी कार्डिलेरा के पूर्वी भाग में स्थित है। इस क्षेत्र की पश्चिमी पर्वत श्रेणी उत्तर में कैस्केड श्रेणी है और दक्षिण में सेरा-नेवाडा की श्रेणियाँ हैं। प्रशांत महासागर के तट के पास तटीय श्रेणी है। पश्चिमी कार्डिलेरा का सबसे ऊँचा पर्वत शिखर माउंट ह्विटने है। इसकी समुद्रतल से ऊँचाई 4418 मीटर है। एक ओर कैस्केड और सेरानेवाडा तथा दूसरी ओर रॉकी पर्वतों के बीच ऊँचे-ऊँचे पठार हैं। इन पठारों के नाम मानचित्र में पढ़ो। इनमें से ग्रेटबेसिन अंत:स्थलीय जल-निकास का एक क्षेत्र है। पश्चिमी कार्डिलेरा में कई राष्ट्रीय पार्क हैं। इनमें से यलोस्टोन नेशनल पार्क

बड़ी संख्या में सैलानियों को आकर्षित करता है। यहाँ के ऊँचे पर्वत शिखर, कैनियन, ज्वालामुखी, गर्म स्रोत तथा गाइजर इस क्षेत्र की सुन्दरता को बढ़ाते हैं।

मध्यवर्ती विशाल मैदान पश्चिम में रॉकी पर्वत तथा पूर्व में अपलेशियन पर्वत के बीच स्थित हैं। मानचित्र में देखो कि इस क्षेत्र में मिसीसिपी नदी और उसकी अनेक सहायक नदियाँ बहती हैं। यह क्षेत्र देश का अत्यंत उपजाऊ भाग है। इसीलिए इसके अधिक भाग पर खेती की जाती है। पूर्वी उच्च भूमि के अंतर्गत अपलेशियन पर्वत आते हैं। ये अत्यंत पुराने तथा कम ऊँचाई के हैं। इन पर्वतों के दोनों ओर कम ऊँचाई के पठार हैं।

जलवायु तथा वनस्पति

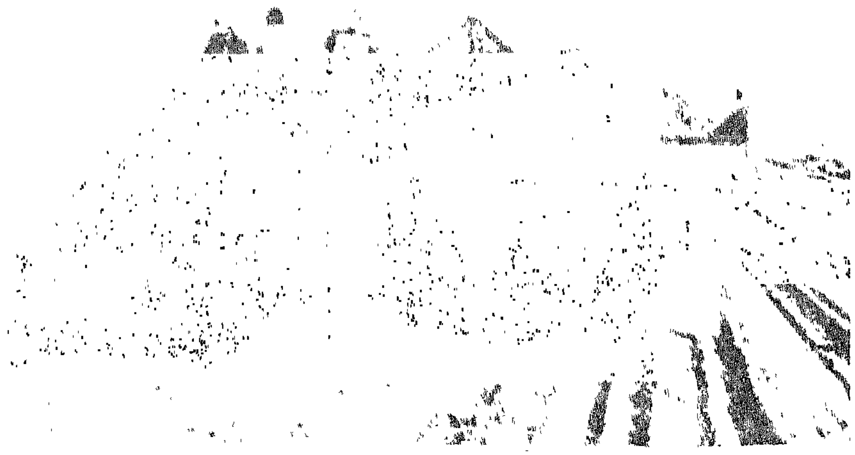
संयुक्त राज्य अमेरिका में विभिन्न प्रकार की जलवायु पाई जाती है। इसका दक्षिणी आधा भाग कोष्ण शीतोष्ण कटिबन्ध में है और उत्तरी आधा भाग शीतल शीतोष्ण कटिबन्ध में है। देश के पूर्वी आधे भाग में पर्याप्त वर्षा होती है। पूर्व से पश्चिम तथा दक्षिण से उत्तर की ओर वर्षा कम होती जाती है। देश के उत्तरी भाग में शीत ऋतु में हिमपात होता है। मध्यवर्ती भाग की जलवायु अति विषम है। अर्थात् गर्मियों में खूब गर्म और सर्दियों में खूब ठण्डी। यहाँ वर्षा हल्की होती है और यह अधिकतर ग्रीष्म ऋतु में होती है। देश के पश्चिमी भाग की जलवायु में अपेक्षाकृत अधिक भिन्नता मिलती है। उत्तर-पश्चिमी क्षेत्र में पछुआ पवनों से सारे साल भारी वर्षा होती है। दक्षिणी कैलिफोर्निया में भूमध्य सागरीय जलवायु मिलती है। ग्रेटबेसिन तथा कोलोरैडो पठार की जलवायु मरुस्थलीय है।

संयुक्त राज्य अमेरिका की मुख्य वनस्पति मिश्रित वन हैं। इनमें शंकुधारी तथा पर्णपाती दोनों प्रकार के वृक्ष मिलते हैं। पश्चिमी कार्डिलेरा के ऊँचे और वर्षा वाले ढलान शंकुधारी वनों से ढके हैं। विशाल रेडवुड तथा डगलस फर उत्तर-पश्चिमी भाग के प्रसिद्ध वृक्ष हैं। मध्यवर्ती विशाल मैदान की वनस्पति प्रेअरी घास है। मरुस्थलीय भागों में विशाल कैक्टस और कई प्रकार की कांटेदार झाड़ियाँ मिलती हैं।

आर्थिक विकास

संयुक्त राज्य अमेरिका कृषि तथा उद्योग दोनों में ही बढ़ा-चढ़ा है। यहाँ के खेतों और उद्योगों के अधिकतर उत्पाद अंतर्राष्ट्रीय व्यापार में जाते हैं।

कृषि—देश के कुल क्षेत्र के लगभग पाँचवें भाग पर खेती की जाती है। यह कृषि क्षेत्र बहुत ही उपजाऊ है और यहाँ सिंचाई के लिए पर्याप्त मात्रा में जल मिलता है। यहाँ वर्धन काल भी लम्बे समय तक रहता है। इस बड़े कृषि क्षेत्र पर देश की जनसंख्या के बहुत ही कम अनुपात में लोग काम करते हैं। खेती में लगी हुई थोड़ी-सी जनसंख्या कृषि-कार्यों में कठिन परिश्रम करती है और देश के कुल

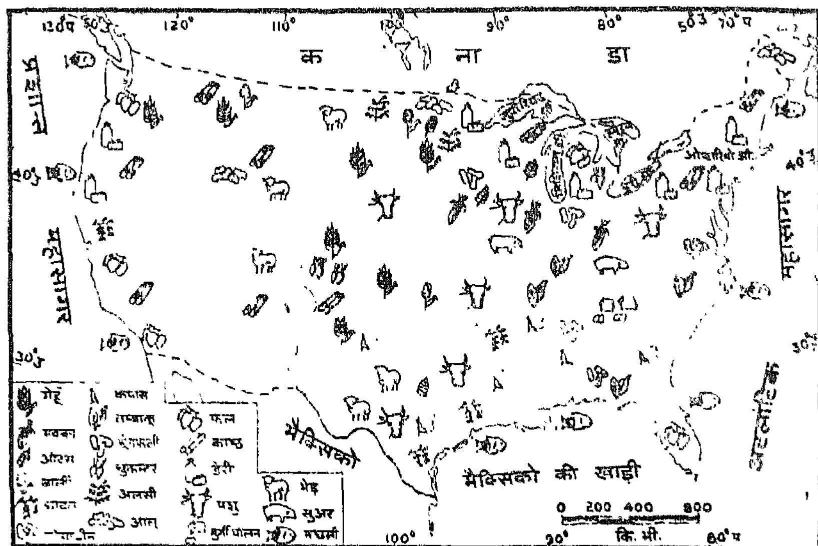


फोटो XXI खेत में आलू एकत्र करने वाली मशीन

फोटोग्राफ में ध्यान से देखो कि यह बड़ी मशीन एक ही समय में जमीन से आलू खोदती है और साथ ही निकट चलने वाली ट्रक में आलू भरती जाती है। अमेरिकी किसानों को इस मशीन से क्या लाभ है?

लोगों की आवश्यकता से अधिक खाद्य पदार्थ पैदा करती है। इतना ही नहीं खपत के बाद इतनी अधिक मात्रा में खाद्य-पदार्थ बच जाते हैं कि उनका बड़ी मात्रा में निर्यात किया जाता है। अमरीकी किसान अपने खेतों से बहुत अधिक पैदावार प्राप्त करता है। इसका मुख्य कारण यह है कि वह खेती करने में मशीनों, उर्वरकों, अच्छे बीजों तथा वैज्ञानिक तरीकों को अपनाता है। इस प्रकार अमेरिका

के किसान संसार में सबसे अधिक समृद्धशाली हैं। उनके रहन-सहन का स्तर बहुत ऊँचा है। उनके घरों में आधुनिक जीवन की सभी सुविधाएँ उपलब्ध हैं।



चित्र 35. संयुक्त राज्य अमेरिका—फसलें तथा पशुपालन

संयुक्त राज्य अमेरिका में पैदा होने वाली फसलों तथा वहाँ पाले जाने वाले पशुओं को मानचित्र में देखो। कपास की खेती अधिकतर दक्षिणी भाग में ही क्यों की जाती है?

मक्का, गेहूँ, जौ, तथा जई संयुक्त राज्य अमेरिका के मुख्य अनाज हैं। इस देश की सबसे महत्वपूर्ण फसल मक्का है। संसार में मक्का के कुल उत्पादन का लगभग 40 प्रतिशत अकेले संयुक्त राज्य अमेरिका प्रदान करता है। यहाँ मक्का की पैदावार का अधिकतर भाग पशुओं, सूअरों तथा मुर्गियों को खिलाया जाता है। इस प्रकार मक्का अप्रत्यक्ष रूप में माँस, दूध, तथा अंडों के रूप में भोजन की मेज पर पहुँचती है।

संयुक्त राज्य अमेरिका का दूसरा महत्त्वपूर्ण अनाज गेहूँ है। यहाँ से गेहूँ और इसका आटा भारी मात्रा में निर्यात किया जाता है। संयुक्त राज्य अमेरिका का गेहूँ के उत्पादन में सोवियत संघ के बाद दूसरा स्थान है। यहाँ जौ और जई का उत्पादन भी मुख्यतः पशुओं को खिलाने के लिए किया जाता है।

संयुक्त राज्य अमेरिका कपास की पैदावार के लिए भी प्रसिद्ध है। यहाँ कपास मुख्यतः दक्षिणी भागों में उगाई जाती है। देश में आलू, सोयाबीन, तंबाकू, चुकंदर तथा अलसी की भी खूब पैदावार होती है। सेब, अंगूर तथा आड़ू आदि फलों का भी यहाँ उत्पादन होता है।

पशुपालन—पशुपालन संयुक्त राज्य अमेरिका की कृषि का महत्वपूर्ण अंग है। यहाँ गाय, बैल, सूअर तथा भेड़ें बड़ी संख्या में पाले जाते हैं। माँस देने वाले पशुओं को पश्चिमी घास-स्थलों और पठारों पर पाला जाता है। यहाँ गाय-बैलों को बड़े रैंचों पर पाला जाता है। घाटियों में स्थित रैंच का मुख्य स्थल कुछ इमारतों का समूह होता है। रैंच के मालिक का मकान एक मंजिला भवन होता है और इसके चारों ओर हरी घास के लान और छोटे-छोटे बाग होते हैं। मकान से कुछ दूर पशुओं को जाड़ों में सुरक्षित रखने के लिए सायबान बने होते हैं। पशुओं को छाँटने, दागने तथा प्रजनन करने के लिए रैंच पर एक या दो बड़े-बड़े कोराल या बाड़े होते हैं। इनके अतिरिक्त रैंच पर एक विशेष स्थान होता है, जहाँ पशुओं को बीमारी से बचाने के लिए दवा मिले जल में गोता दिया जाता है, उन्हें वैट या कुंड कहते हैं। रैंच पर गोदाम, मशीनों की मरम्मत करने की कार्यशाला तथा काऊब्वाय या चरावाहों के सोने के लिए घर आदि अन्य इमारतें भी होती हैं।

ग्रीष्म ऋतु के आरम्भ में काऊब्वाय रैंच के सभी भागों से गाय-बैलों को घेर लाते हैं। तब पशुओं को कोराल में ले जाया जाता है। यहाँ नये बछड़ों को दागा जाता है और पशुओं की छँटाई की जाती है। कुछ पशु तो छाँट कर रैंच पर ही छोड़ दिए जाते हैं और शेष को शीतल पर्वतीय चरागाहों की ओर हाँक दिया जाता है। जब अधिकतर पशु पर्वतीय चरागाहों पर चर रहे होते हैं तब रैंच पर उगाई घास शीत ऋतु में पशुओं को खिलाने के लिए सुरक्षित रख ली जाती है। शीत ऋतु के प्रारम्भ में पशुओं को रैंचों पर वापस ले आते



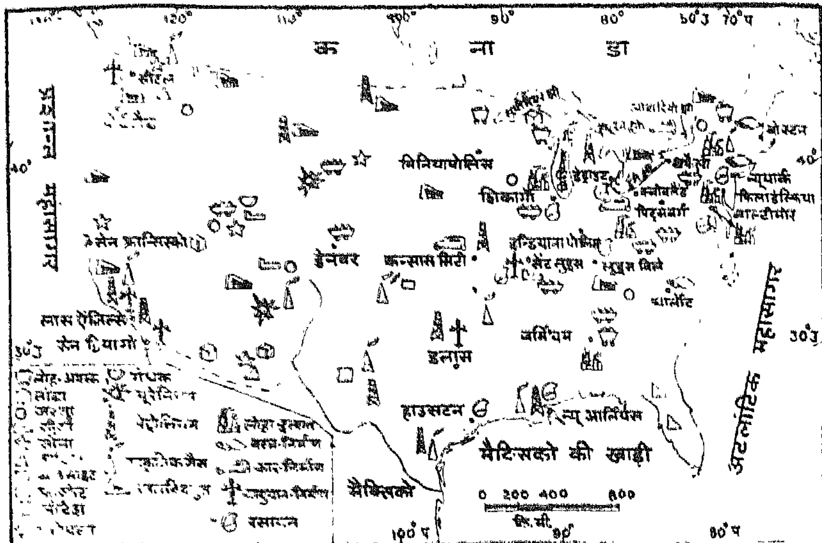
फोटो XXII. बछड़े को टीका लगाना

फोटोग्राफ में देखो कि यह काउब्वाय या चरवाहा बीमारी से बचाने के लिए एक बछड़े को टीका लगा रहा है। अमेरिका के रैंचों में काम करने वाले इन काउब्वाय के कपड़े देखो।

हैं। जिन पशुओं को बेचना होता है उन्हें मोटर, ट्रक और रेलगाड़ियों द्वारा मक्का के बड़े-बड़े खेतों पर पहुँचाया जाता है। वहाँ पशुओं को मक्का खिलाकर बेचने के लिए मोटा किया जाता है। जो पशु बिकने से बच जाते हैं उन्हें रैंच पर वापिस ले आते हैं।

डेरी फार्मिंग लगभग सारे देश में की जाती है। लेकिन देश का उत्तर पूर्वी भाग और महान् झीलों के आसपास का क्षेत्र डेरी फार्मिंग के प्रमुख क्षेत्र हैं। इन क्षेत्रों की जलवायु डेरी फार्मिंग के लिए अनुकूल है। यहाँ बहुत से नगर हैं जहाँ दूध और दूध के उत्पादों की निरन्तर माँग रहती है। दूध के उत्पादन में संयुक्त राज्य अमेरिका का सोवियत संघ के बाद दूसरा स्थान है। यह देश पनीर तथा मक्खन के उत्पादन में संसार में सबसे आगे है।

मत्स्य उद्योग—इस देश के अटलांटिक और प्रशान्त महासागर के तटों पर भारी मात्रा में मछलियाँ पकड़ी जाती हैं। मछलियों की पकड़ने की मात्रा के अनुसार संयुक्त राज्य अमेरिका का संसार में पाँचवाँ स्थान है।



चित्र 36. संयुक्त राज्य अमेरिका—खनिज तथा उद्योग

मानचित्र में खनिजों और उद्योगों का वितरण देखो। संयुक्त राज्य का उत्तर-पूर्वी भाग उद्योगों के लिए क्यों प्रसिद्ध है?

वन उद्योग—संयुक्त राज्य अमेरिका के कुल क्षेत्रफल का एक-तिहाई भाग वनों से ढका है। इन वनों से भारी मात्रा में लकड़ी प्राप्त की जाती है।

लुगदी के उत्पादन में यह देश सबसे आगे है। कनाडा के बाद संयुक्त राज्य अमेरिका का अखबारी कागज के उत्पादन में दूसरा स्थान है।

खनिज तथा ईंधन—संयुक्त राज्य अमेरिका धात्विक खनिज जैसे लोहा, तांबा, जस्ता, सीसा, सोना तथा चांदी में बहुत धनी है। तांबा के उत्पादन में इस देश का संसार में पहला स्थान है। सुपीरियर झील के आसपास इसके लौह-अयस्क के भंडार संसार में बहुत ही विशाल माने जाते हैं। बाक्साइट तथा यूरेनियम भी संयुक्त राज्य अमेरिका में मिलते हैं। यहाँ फास्फेट, पोटाश और गंधक के विशाल निक्षेप हैं। इनका उपयोग उर्वरक बनाने और बड़े पैमाने पर रसायन तैयार करने में होता है।

संयुक्त राज्य अमेरिका में कोयले के विशाल भंडार हैं और यह कोयले के उत्पादन में संसार के प्रमुख देशों में से है। यहाँ अपलेशियन क्षेत्र में सबसे अधिक मात्रा में कोयला निकाला जाता है। इस देश के पेट्रोलियम साधन भी विशाल हैं। पेट्रोलियम के उत्पादन में संयुक्त राज्य अमेरिका का संसार में प्रथम स्थान है। मध्यवर्ती मैदान और खाड़ी के तटीय भागों में यहाँ सबसे अधिक पेट्रोलियम निकाला जाता है। यहाँ के इन तेल क्षेत्रों को लम्बी-लम्बी पाइप लाइनों द्वारा तेल के बाजार केन्द्रों से जोड़ा गया है। अटलांटिक महासागर के तट पर स्थित तेल साफ़ करने के कारखाने संसार भर में सबसे बड़े माने जाते हैं। प्राकृतिक गैस के उत्पादन में भी संयुक्त राज्य अमेरिका का विश्व में प्रथम स्थान है। यहाँ गैस की पाइप लाइनें गैस क्षेत्रों से देश के सैकड़ों किलोमीटर दूरवर्ती स्थानों तक फैली हुई हैं। इन पाइप लाइनों द्वारा देश के अनेक नगरों तथा औद्योगिक केन्द्रों को गैस भेजी जाती है।

संयुक्त राज्य अमेरिका में जलशक्ति के भी विशाल स्रोत हैं। पश्चिम के पर्वतीय एवं प्रशान्त महासागरीय राज्यों में कोयले की तो कमी है, परन्तु ये राज्य जलशक्ति के साधनों में बहुत धनी हैं। देश में अब कई परमाणु-ऊर्जा केन्द्र हैं जहाँ विद्युत तैयार की जाती है।

निर्माण उद्योग—संयुक्त राज्य अमेरिका संसार के प्रमुख औद्योगिक देशों में से एक है। इसका कारण यह है कि यह देश खनिज तथा कृषि-संपदा दोनों ही में अत्यन्त धनी है, जिससे विभिन्न प्रकार के उद्योगों के लिए यहाँ विविध प्रकार का ईंधन और पर्याप्त मात्रा में कच्चा माल मिलता है। अत्यधिक

धन, कुशल मजदूर, बड़े-बड़े बाजार तथा अति उत्तम और सस्ते यातायात के साधन भी यहाँ के उद्योगों के विकास के लिए अनुकूल कारक हैं।

लोहा और इस्पात उद्योग में सोवियत संघ के बाद संयुक्त राज्य अमेरिका का विश्व में दूसरा स्थान है। लोहा-इस्पात उद्योग ही इस देश के भारी युद्ध-शस्त्र, रेल-इंजन, रेल के डिब्बे तथा मोटरगाड़ियाँ जैसी भारी वस्तुएँ बनाने का आधार है। संयुक्त राज्य अमेरिका ही संसार में सबसे अधिक वायुयान बनाता है। संसार में मोटर वाहनों के कुल उत्पादन की लगभग आधी संख्या में मोटर वाहन अकेले संयुक्त राज्य अमेरिका में बनाई जाती हैं। डेट्राइट मोटरकार उद्योग का मुख्य केन्द्र है। यहाँ कार-निर्माण करने वाले बहुत बड़े-बड़े कारखाने हैं। संयुक्त राज्य अमेरिका में आजकल बड़े पैमाने पर ऐसी मशीनें तैयार की जाती हैं जो अपने आप कार्य करती हैं और साथ ही अन्य मशीनों के काम की भी देखभाल करती हैं। इन अपने आपसे काम करने वाली मशीनों के प्रयोग से कारखानों में बहुत से कारीगरों को अधिक शारीरिक मेहनत की आवश्यकता नहीं पड़ती। इन मशीनों के उपयोग से उत्पादन व्यय भी कम होता है। ये मशीनें आजकल खूब निर्यात की जाती हैं।

अयस्क को पिघलाकर उनसे धातु निकालना भी इस देश का महत्व-पूर्ण उद्योग है। संयुक्त राज्य अमेरिका में विभिन्न प्रकार के बिजली के सामान भी तैयार किए जाते हैं। यहाँ का वस्त्र निर्माण उद्योग भी खूब विकसित है। कागज बनाना और भोजन संसाधन भी संयुक्त राज्य अमेरिका में बड़े पैमाने पर चलने वाले उद्योग हैं। माँस, चीनी, डेरी-उद्योग की विभिन्न वस्तुएँ तथा वनस्पति तेल, भोजन संसाधन उद्योग की प्रमुख वस्तुएँ हैं।

संयुक्त राज्य अमेरिका में अधिकतर उद्योग देश के उत्तर-पूर्वी भाग में स्थित हैं। बोस्टन, न्यूयार्क, फिलाडेलफिया, डेट्राइट तथा शिकागो इस क्षेत्र के प्रमुख औद्योगिक नगर हैं। लासएंजिल्स देश के पश्चिमी तट पर स्थित महत्व-पूर्ण औद्योगिक केन्द्र है।

जनसंख्या

संयुक्त राज्य अमेरिका की कुल जनसंख्या 21 करोड़ 50 लाख है। यहाँ जनसंख्या का औसत घनत्व लगभग 23 व्यक्ति प्रति वर्ग किलोमीटर है।

यहाँ जनसंख्या का वितरण बहुत ही असमान है। देश की लगभग तीन-चौथाई जनसंख्या देश के आधे पूर्वी भाग में रहती है। संयुक्त राज्य अमेरिका में अधिकतर लोग नगरों में रहते हैं।

न्यूयार्क उत्तर अमेरिका का सबसे बड़ा नगर है। आज इसकी जनसंख्या 70 लाख से भी अधिक है। न्यूयार्क में संयुक्त राष्ट्रसंघ का प्रधान कार्यालय है। यह अंतर्राष्ट्रीय व्यापार तथा वाणिज्य का केन्द्र है। यह अपने गगनचुम्बी भवनों (स्काई स्क्रेपर) के लिए संसार भर में प्रसिद्ध है। शिकागो संयुक्त राज्य अमेरिका का दूसरा बड़ा नगर है। वाशिंगटन डी० सी० यहाँ की राजधानी है तथा यह एक सुनियोजित नगर है।

यातायात

संयुक्त राज्य अमेरिका में यातायात के बहुत ही अच्छे तथा सुगम साधन हैं। देश के अधिकांश बड़े-बड़े नगर रेलमार्गों, सड़कों तथा वायुमार्गों से जुड़े हुए हैं। मोटरगाड़ियाँ दैनिक यातायात के लिए सबसे अधिक लोकप्रिय साधन हैं। कारों द्वारा लम्बी दूरी तय करते समय लोग रास्ते में बने मोटलों में ठहरते हैं। **मोटल** एक प्रकार का होटल होता है जहाँ सोने तथा आराम करने के लिए कमरे, रसोईघर तथा कारों को खड़ा करने के लिए पर्याप्त स्थान होता है। इस देश में बहुत से महामार्ग इतने चौड़े हैं कि उन पर छः-छः मोटरगाड़ियाँ एक साथ दाएँ-बाएँ एक ही दिशा में बड़ी आसानी से दौड़ सकती हैं। इन चौड़ी सड़कों का निर्माण केवल तेज़ चलने वाली गाड़ियों के लिए किया जाता है। इन सड़कों के चौराहों पर एक सड़क को दूसरी सड़क के ऊपर से निकाल देते हैं जिससे वाहनों को मुड़ने के लिए रुकना नहीं पड़ता और उनकी गति भी कम नहीं करनी पड़ती है। ऐसी सड़कों पर मोटरगाड़ियाँ केवल एक ही दिशा में चलती हैं। इन चौड़ी-चौड़ी सड़कों को **खुलामार्ग** या **सुपरमार्ग** कहते हैं।

देश भर में रेलमार्गों का विस्तृत जाल फैला है। अंतर्महाद्वीपीय रेलमार्ग अटलांटिक महासागर के तट को प्रशांत महासागर के तट से जोड़ते हैं। यह दूरी 5000 किलोमीटर के लगभग है और इस यात्रा को तय करने में 5 दिन लगते हैं। शिकागो संयुक्त राज्य अमेरिका का मुख्य रेल केन्द्र है। यह



फोटो XXIII. जार्ज वाशिंगटन पुल

हडसन नदी पर बना यह विशाल पुल न्यूयार्क नगर को देश की मुख्य भूमि से मिलाता है। कतारों में दौड़ती हुई मोटरकारों को देखो। इस पुल पर आने-जाने के लिए कितने सड़क मार्ग हैं ?

संसार का सबसे बड़ा रेलवे जंक्शन है। शिकागो अंतःस्थलीय पत्तन भी है। यह किस प्रकार का पत्तन है ? नावों तथा स्टीमरों से भी बड़ी मात्रा में सामान ढोया जाता है। महान् झीलों और सेंट लारेंस नदी में जहाजी सेवा बहुत अच्छी है। हवाई जहाज आजकल दिनों-दिन लम्बी यात्राओं के लिए लोकप्रिय हो रहे हैं।

नवीन पारिभाषिक शब्द जो तुमने इस पाठ में पढ़े : मोटल—एक प्रकार का होटल जहां लोगों के ठहरने और आराम करने के लिए कमरे, रसोईघर तथा कारों के खड़े करने के लिए पर्याप्त स्थान होता है।

स्वाध्याय

पुनर्विचार

1. नीचे लिखे प्रश्नों के संक्षेप में उत्तर दो :

   (क) संयुक्त राज्य अमेरिका के वे दो कौन-से राज्य हैं जो देश की मुख्य भूमि से अलग हैं ?

   (ख) संयुक्त राज्य अमेरिका के दो महत्वपूर्ण अनाजों के नाम बताओ।

   (ग) संयुक्त राज्य की तीन औद्योगिक फसलें कौन-सी हैं ?

   (घ) डेरी उद्योग अधिकतर बड़े-बड़े नगरों के निकट ही क्यों स्थित हैं ?

   (ङ) संयुक्त राज्य अमेरिका का सबसे प्रमुख कोयला क्षेत्र कौन-सा है ?

2. नीचे दिए कालमों में से सही जोड़े बनाओ :

(1) संयुक्त राज्य अमेरिका की राजधानी	(क) न्यूयार्क
(2) संसार का सबसे बड़ा रेल-जंक्शन	(ख) लासएंजिल्स
(3) मोटरगाड़ियों के निर्माण का सबसे बड़ा केन्द्र	(ग) पिट्सबर्ग
	(घ) शिकागो
(4) एक नगर जहां संयुक्त राज्य संघ का मुख्य कार्यालय है	(ङ) वाशिंगटन डी० सी०
(5) प्रशान्त महासागर के तट का महत्व-पूर्ण औद्योगिक नगर	(च) डेट्राइट

3. उन सभी कारकों का संक्षेप में वर्णन करो जिनके कारण संयुक्त राज्य अमेरिका में तेजी से उद्योगों की वृद्धि हो सकती है।

4. संयुक्त राज्य अमेरिका के एक पशु रैंच पर काउब्वाय लोगों के भिन्न-भिन्न कार्यों का वर्णन करो।

चित्र अध्ययन

5. फोटोग्राफ XII और XXI की तुलना करके बताओ कि संयुक्त राज्य अमेरिका के खेतों से आलू की फसल एकत्र करने और ब्राजील के खेतों से गन्ने की फसल इकट्ठा करने में क्या अन्तर है?

मानचित्र-कार्य

6. संयुक्त राज्य अमेरिका के एक बड़े रेखा-मानचित्र पर भिन्न-भिन्न संकेतों द्वारा प्रमुख फसलों, खनिजों तथा उद्योगों को दिखाओ।

विचार-विमर्श

7. "प्राकृतिक संपदा और लोग"
किसी देश के विकास के लिए इनमें से कौन अधिक महत्वपूर्ण है? कक्षा को दो समूहों में बाँटो, एक संयुक्त राज्य अमेरिका की प्राकृतिक संपदा और दूसरा यहाँ के लोगों के बारे में बातचीत करें। इस चर्चा द्वारा तुम किस निष्कर्ष पर पहुँचते हो?

खंड पाँच

स्थानीय भूगोल

इस खंड में तुम कुछ ऐसी जानकारी प्राप्तक रोगे जिसका प्रयोग तुम स्वयं भी करके देख सकते हो। पिछली कक्षा में तुम पृथ्वी के घूर्णन और परिक्रमण के बारे में पढ़ चुके थे। तुम्हें मालूम है कि इन गतियों के कारण दिन और रात तथा ऋतुओं में परिवर्तन होते हैं। तुम स्वयं अपने स्थान में दिन और रात की अवधि मालूम कर इस कथन की सत्यता जान सकते हो।

सूरज से दिशा कैसे जानी जाती है यह तो तुम्हें पता है। पर रात में जब तुम सूरज को नहीं देख सकते, क्या तुम दिशा का पता लगा सकते हो? हाँ, ध्रुव तारे की मदद से तुम दिशा मालूम कर सकते हो। कैसे, यह हम तुम्हें अगले अध्याय में बताएँगे।

मानचित्रों का अध्ययन करना भी तुमने पिछली कक्षा में सीखा है। यहाँ हम तुम्हें मानचित्रों पर प्रमुख भौतिक तथा नगरीय लक्षणों को सही-सही पहचानने के लिए कुछ और जानकारी देंगे। इससे तुम्हें स्थानीय भूगोल का अध्ययन करने में भी सहायता मिलेगी। जब हम पर्यवेक्षण तथा मानचित्रों की मदद से स्थानीय भूगोल का अध्ययन करना सीख जाते हैं तो हमें इस ज्ञान की मदद से किसी दूर स्थित प्रदेश के भूगोल को समझने में भी आसानी होती है।

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स्थानीय भूगोल का अध्ययन

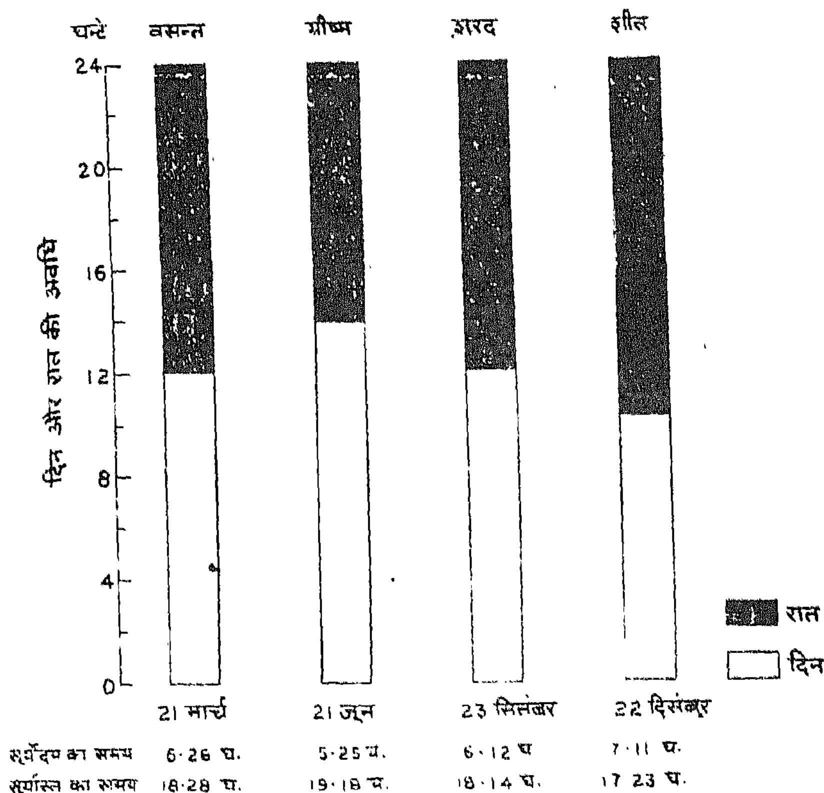
आकाश के विभिन्न दृश्य बड़े ही मनमोहक होते हैं। चाहे सूर्योदय का दृश्य हो अथवा सूर्यास्त का, दिन के समय विभिन्न प्रकार के बादलों से घिरा आकाश हो अथवा अँधेरी रात में असंख्य तारों के झिलमिलाने की छटा, सभी मन को लुभाने वाले होते हैं। सूर्योदय और सूर्यास्त का अध्ययन हमारे लिए कई प्रकार से उपयोगी है। इनसे हमें दिशाओं की जानकारी के अतिरिक्त दिन तथा रात की लम्बाई का भी बोध होता है। तारों की स्थिति के अध्ययन से भी हमें दिशा का ज्ञान होता है।

सूर्योदय तथा सूर्यास्त

तुम जानते हो कि सूर्य प्रतिदिन पूर्व में उदय और पश्चिम में अस्त होता है। सूर्योदय एवं सूर्यास्त की इन दिशाओं के संदर्भ में हम अन्य दिशाएं मालूम करते हैं। यदि तुम किसी खुले मैदान या ऊँची इमारत की छत पर इस प्रकार खड़े हो कि तुम्हारे दाहिने हाथ की ओर सूर्योदय हो रहा हो तो तुम्हारे सामने, बायें हाथ की ओर पीठ पीछे क्रमशः कौन सी दिशाएँ होंगी ?

सूर्योदय और सूर्यास्त के बीच की अवधि को दिन तथा सूर्यास्त से सूर्योदय तक की अवधि को रात कहते हैं। तुम जानते हो कि ग्रीष्म ऋतु में दिन बड़े और रातें छोटी होती हैं। इसके विपरीत शीत ऋतु में दिन छोटे और रातें बड़ी होती हैं। शरद् और बसन्त ऋतुओं में दिन और रात की अवधि लगभग बराबर होती है। तुमने यह भी अनुभव किया होगा कि शीत ऋतु में सूर्योदय देर से होता है और सूर्यास्त जल्दी हो जाता है। इसके दूसरी ओर ग्रीष्म ऋतु में सूर्योदय जल्दी और सूर्यास्त देर से होता है।

इन सभी तथ्यों की जाँच तुम स्वयं ही कर सकते हो। इसके लिए तुम्हें वर्ष भर प्रतिदिन सूर्योदय और सूर्यास्त के समयों को लिखना होगा। दैनिक समाचार-पत्रों में प्रतिदिन के सूर्योदय और सूर्यास्त के समयों की सूचना दी जाती है। इनकी मदद से तुम प्रत्येक तिथि में दिन और रात की अवधि मालूम कर सकते हो।



चित्र 37. दिल्ली में विभिन्न ऋतुओं में दिन और रात की अवधि
चारों तिथियों में सूर्योदय और सूर्यास्त के समयों को नोट करो और मालूम करो कि प्रत्येक तिथि पर दिन और रात की लम्बाई कितनी है?

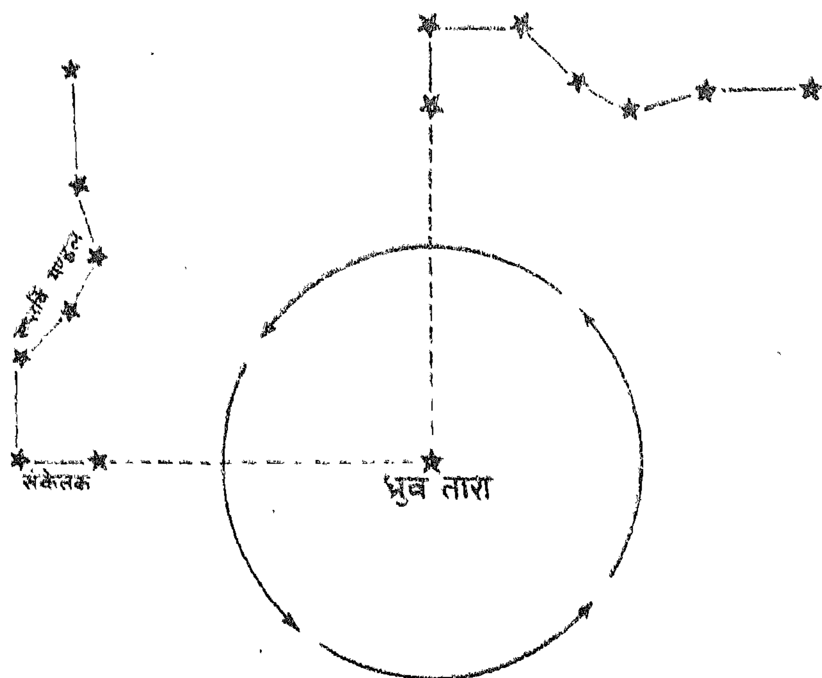
सूर्य परिक्रमण में 21 मार्च, 21 जून, 23 सितम्बर और 22 दिसम्बर पृथ्वी की चार महत्वपूर्ण स्थितियाँ हैं। ये तिथियाँ वर्ष की चार प्रमुख ऋतुओं का प्रतिनिधित्व करती हैं। दिल्ली में इन चार तिथियों पर दिन और रात की अवधि को चित्र 37 में दिखाया गया है। इस चित्र का ध्यान से अध्ययन करो और नीचे दिए गए प्रश्नों के उत्तर दो।

किस तिथि को दिन की लम्बाई सबसे अधिक है? किन ऋतुओं में सूर्योदय और सूर्यास्त के समय लगभग एक समान हैं? जब दिन की लम्बाई रात की लम्बाई से बड़ी होती है तो उसका तापमान पर क्या प्रभाव पड़ता है? रात की अवधि दिन की अवधि से लम्बी होने और शीत ऋतु से क्या संबंध है? शरद् और वसन्त ऋतुओं में न अधिक गर्मी पड़ती है और न अधिक सर्दी ऐसा क्यों?

तारामंडल

तुमने रात में विशेषतया अंधेरी रात में आकाश में असंख्य तारों को झिलमिलाते देखा होगा। हम इन सभी तारों को नाम नहीं दे सकते, इनमें से कुछ तारा-समूहों को पहचानने की सुविधा के लिए नाम दिए गए हैं। तारों के छोटे-छोटे समूह को तारामंडल कहते हैं। रात के समय आकाश में तुम कई तारामंडलों को देख सकते हो। इनमें से एक तारा-समूह सप्तर्षि तारामंडल है। इसमें सात तारे हैं और इसकी आकृति एक बड़े भालू या हल के समान है (चित्र 38)। इस सप्तर्षि तारामंडल के दो तारे जिन्हें संकेतक कहते हैं की सहायता से तुम ध्रुवतारा खोज सकते हो। अगर इन तारों की सीध में हम आकाश में देखें (जैसा कि चित्र 38 में दिखाया गया है) तो हमें एक काफी चमकता तारा दिखाई देगा, यही ध्रुवतारा है। ध्रुवतारा हमेशा उत्तर ध्रुव के ठीक ऊपर चमकता है, इसीलिए इसका यह नाम पड़ा है।

रात के समय ध्रुवतारे को देखकर उत्तर दिशा ज्ञात की जाती है। रात में दिशा ज्ञात करने की इस विधि का उपयोग भटके हुए सैनिकों, नाविकों और मरुस्थल में काफिलों द्वारा किया जाता है।



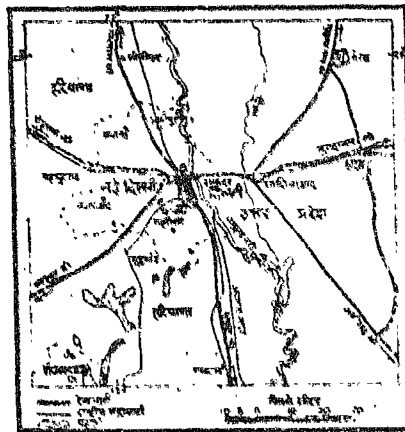
चित्र 38. सप्तर्षि तारामंडल और ध्रुवतारा
उत्तरी गोलार्द्ध में सप्तर्षि तारामंडल ध्रुवतारे के चारों और परिक्रमा करता रहता है। इसके आगे के दो तारे जिन्हें संकेतक कहते हैं, सदैव ध्रुवतारे की सीध में रहते हैं। ध्रुवतारे से हमें क्या लाभ है ?

स्थानीय मानचित्र का अध्ययन

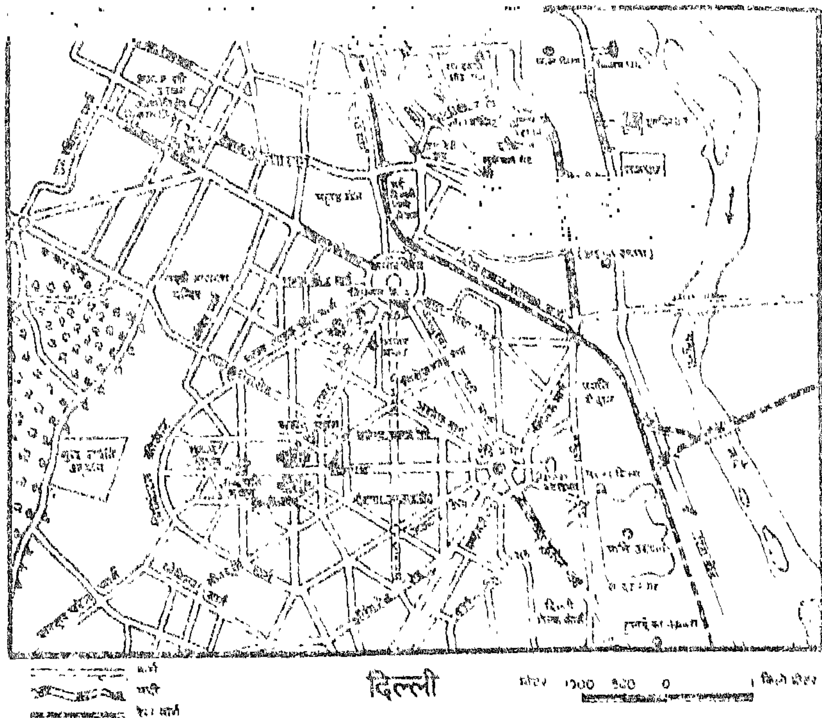
तुम जानते हो कि मानचित्र पृथ्वी अथवा उसके किसी भाग का समतल कागज या धरातल पर बनाया पैमाने पर आधारित रूढ़िगत चित्रण है। इसकी मदद से मानचित्र में दिखाए क्षेत्र के विभिन्न लक्षणों की स्थिति

आसानी से जानी जा सकती है। तुमने इस पुस्तक में महाद्वीपों और देशों के कई मानचित्रों का अध्ययन किया है। ये सभी छोटे अनुमाप पर बनाए गये हैं। इसीलिए इनमें अधिक ब्योरे नहीं दिखाए जा सकते। तुमने अपने गाँव या नगर के मानचित्र भी देखे होंगे। वे बड़े पैमाने पर बनाए जाते हैं और उनमें महाद्वीपों या देशों के मानचित्रों की अपेक्षा अधिक ब्योरे दिखाए जा सकते हैं। नीचे दो मानचित्र दिए गए हैं। पहले में दिल्ली नगर की अवस्थिति दिखाई गई है। दूसरे में दिल्ली नगर के एक भाग को बड़े अनुमाप पर दिखाया गया है। इन मानचित्रों पर विभिन्न चिह्नों के द्वारा प्रमुख भौगोलिक लक्षण दिखाए गए हैं। उनकी सहायता से निम्नलिखित प्रश्नों के उत्तर दो। मानचित्र 39 'अ' में देख कर बताओ दिल्ली यमुना के किस ओर स्थित है। यहाँ से रेलमार्ग कहाँ-कहाँ जाते हैं। इनके बारे में बताओ। दिल्ली के किस ओर कुछ ऊँची पहाड़ियाँ स्थित हैं।

मानचित्र 39 'ब' को देखकर उन चार प्रमुख सड़कों के नाम बताओ जो कनाट प्लेस से चार विपरीत दिशाओं में जाती हैं। नई दिल्ली रेलवे स्टेशन मानचित्र पर खोजो। मानचित्र पर दिल्ली नगर के प्रदर्शित क्षेत्र के किस भाग में लाल किला स्थित है। लाल किला से पुराना किला किस ओर है और कितने किलोमीटर दूर है? दिल्ली क्षेत्र के किस भाग में वन हैं? इंडिया गेट,



चित्र 39 (अ). दिल्ली की अवस्थिति



चित्र 39 (ब). दिल्ली के एक भाग का मानचित्र

पहले मानचित्र (39 अ) में दिल्ली नगर की अवस्थिति दिखाई गई है। दूसरे मानचित्र (39 ब) में इसके एक भाग को अपेक्षाकृत बड़े अनुमाप पर दिखाया गया है। इसलिए इसमें बहुत से ब्योरे दिखाए गए हैं। इस मानचित्र में एक सेन्टीमीटर दूरी भूमि की कितने मीटर दूरी को प्रदर्शित करती है ?

राष्ट्रपति भवन, संसद भवन और केन्द्रीय सचिवालय दिल्ली के कुछ महत्वपूर्ण भवन हैं, इनको पहचानो। ये किस-किस भाग में स्थित हैं ? राष्ट्रपति भवन से इंडिया गेट कितने किलोमीटर दूर है ?

पास-पड़ोस में स्थलरूपों की पहचान

तुम जानते हो कि पर्वत, पठार और मैदान स्थल के तीन प्रमुख रूप हैं। प्रत्येक स्थलरूप के अपने विशिष्ट लक्षण होते हैं। मुख्यत: ये दो हैं— ऊँचाई और ढाल। इन्हीं लक्षणों की सहायता से क्षेत्र में स्थलरूपों को पहचाना जाता है। नीचे तुम्हारी जानकारी के लिए पर्वत, पठार और मैदान की प्रमुख विशेषताएँ दी जा रही हैं। पास-पड़ोस का भ्रमण करते समय इन विशेषताओं की सहायता से तुम प्रमुख स्थलरूपों को पहचान सकोगे।

भूमि का वह भाग जो आसपास के क्षेत्र से बहुत ऊँचा हो, **पर्वत** कहलाता है। पर्वतीय क्षेत्र ऊबड़-खाबड़ होता है और वहाँ ऊँची और नोकदार पर्वत-चोटियाँ, गहरी घाटियाँ और खड़े ढलान देखने को मिलते हैं।

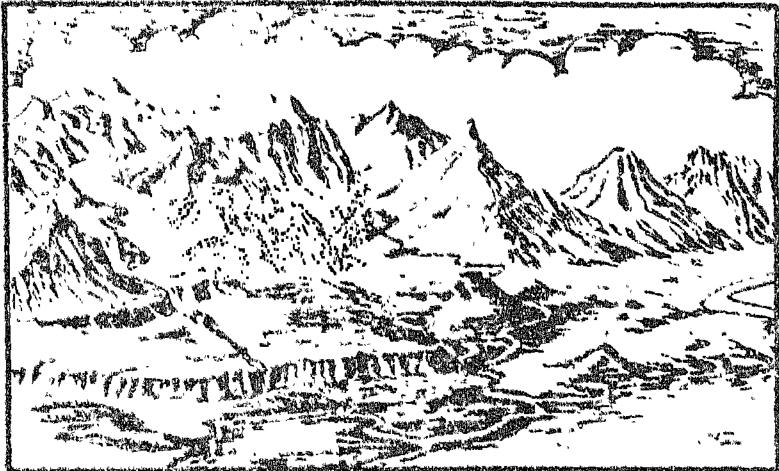
पठार—अपेक्षाकृत समतल धरातल का वह विस्तृत भू-भाग है जो आसपास की निम्न भूमि की सतह से एकदम उठा हुआ होता है। पर्वत के शीर्ष पर बहुत ही कम विस्तार की एक चोटी होती है, परन्तु पठार के शीर्ष पर एक लम्बा-चौड़ा समतल भू-भाग होता है।

मैदान—अपेक्षाकृत एक निचला सपाट भू-भाग होता है। इसका धरातल पर्वतीय या पठारी क्षेत्रों की भाँति ऊँचा-नीचा नहीं होता। इसकी ढाल मन्द होती है। मैदानों में नदियाँ प्राय: मन्थर गति से टेढ़े-मेढ़े भाग में बहती हैं और उनकी घाटी चौड़ी तथा उथली होती हैं परन्तु पर्वतीय या पठारी क्षेत्रों में वे तेज़ गति से कूदती-फांदती हुई बहती हैं और उनकी घाटियाँ संकरी तथा गहरी होती हैं।

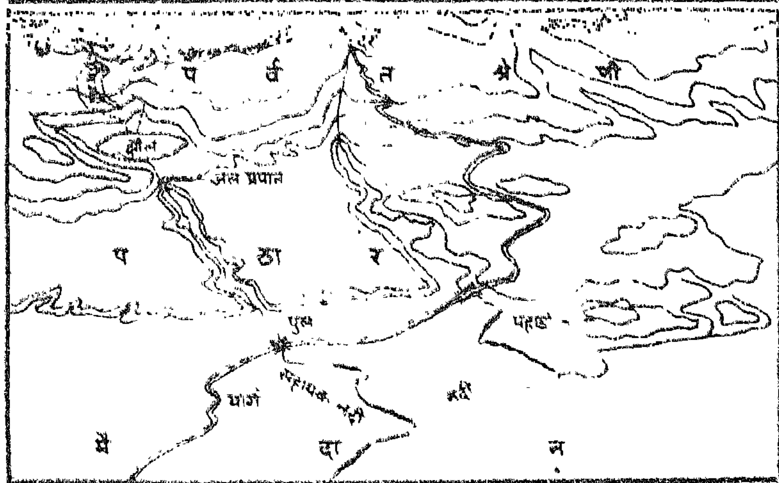
मानचित्र में स्थलरूपों को पहचानना

तुमने इस पुस्तक में दिए आस्ट्रेलिया, दक्षिण अमेरिका और उत्तर अमेरिका के भौतिक लक्षण दिखाने वाले मानचित्र अध्ययन किए हैं। इन मानचित्रों द्वारा समुद्र तल से विभिन्न ऊँचाईयों के धरातल को एक ही रंग की अलग-अलग आभाओं से दिखाया गया है। एटलस में ऐसे मानचित्रों में भौतिक लक्षण दिखाने के लिए विभिन्न रंग प्रयोग किए जाते हैं। सबसे नीची भूमि अर्थात् मैदान को हरे रंग से, सबसे ऊँची भूमि अर्थात् ऊँचे-ऊँचे पर्वतीय भाग

(अ)



(ब)



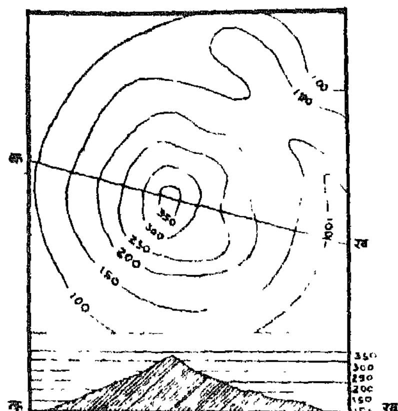
चित्र 40. भू-आकृति—दृश्य और उसका मानचित्र

चित्र 'अ' में पर्वत, पठार और मैदान की आकृतियों को देखो। इनमें तुम क्या अंतर पाते हो? चित्र 'ब' में इन्हीं आकृतियों के लक्षणों अर्थात् ऊँचाई और ढाल को कुछ समोच्च रेखाओं और आभाओं द्वारा दिखाया गया है।

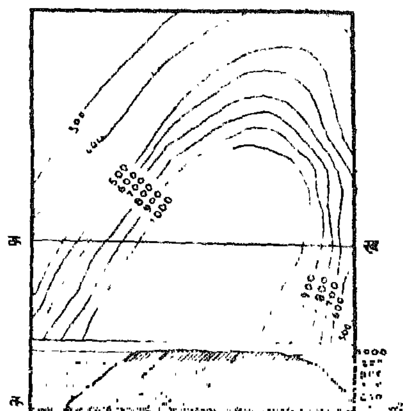
को गहरे भूरे रंग से और बीच की ऊँचाई के विस्तृत भू-भाग अर्थात् पठार को हल्के भूरे या पीले रंग और पानी वाले भाग को नीले रंग से दिखाया जाता है। मानचित्र में एक रंग की विभिन्न आभाओं या अलग-अलग रंगों द्वारा भौतिक लक्षण दिखाने की विधि सबसे सामान्य है।

मानचित्रों में स्थल रूपों को प्रायः समोच्च रेखाओं द्वारा दिखाया जाता है। समोच्च रेखाएँ मानचित्र पर खींची गई वे रेखाएँ हैं जो समुद्र तल से समान ऊँचाई वाले सभी स्थानों को मिलाती हैं। समोच्च रेखाओं के एक-दूसरे के बहुत पास होने से तीव्र ढलान और उनके दूर-दूर होने से भूमि के मंद ढाल होने का बोध होता है। समोच्च रेखाओं के खींचने पर जो आकृति विकसित होती है उससे भूमि के वास्तविक स्वरूप की जानकारी मिलती है। इसलिए मानचित्र में स्थलरूपों की सही पहचान समोच्च रेखाओं से बनी आकृति द्वारा की जाती है। पृष्ठ 150 पर तुम्हारी जानकारी के लिए कुछ स्थलरूपों से संबंधित समोच्च रेखीय आकृतियाँ दी जा रही हैं। स्थानीय मानचित्र में तुम इन समोच्च रेखीय आकृतियों से वास्तविक स्थलरूपों को पहचान सकते हो।

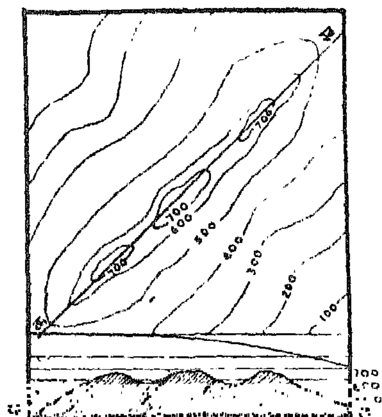
मानचित्र पर लगभग समान अंतर पर खींची गई सकेन्द्री समोच्च रेखाएँ शंकव पहाड़ी को निरूपित करती हैं। पठार को निरूपित करने वाली समोच्च रेखीय आकृति में बीच का लम्बा-चौड़ा भाग खाली होता है, इसमें समोच्च रेखाएँ नहीं होतीं और इस खाली भाग के किनारे पर समोच्च रेखाएँ पास-पास होती हैं। कटक या लम्बी पहाड़ी दीर्घवृत्ताकार समोच्च रेखाओं द्वारा प्रदर्शित की जाती है। मैदान को प्रदर्शित करने वाली समोच्च रेखाओं के बीच की दूरी बहुत अधिक और उनका मानचित्र में प्रायः अभाव होता है। घाटी को प्रदर्शित करने वाली रेखाओं की आकृति अंग्रेजी के अक्षर 'V' के समान होती है।



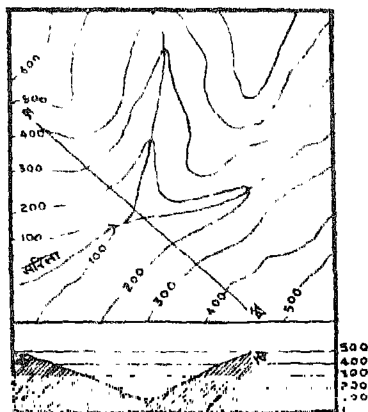
शाकव पहाड़ी



पठार



कटक



घाटी

चित्र 41. शाकव पहाड़ी, पठार, कटक और घाटी की समोच्च रेखीय आकृतियां
चारों स्थलाकृतियों की समोच्च रेखीय आकृतियों की तुलना करो और इनके बीच अन्तर स्पष्ट करो।

अब तुम समोच्च रेखाओं की मदद से प्रमुख भू-आकृतियों को मानचित्र पर पहचान सकते हो। चित्र 40 'ब' को ध्यान से देखो। क्या तुम अब बता सकते हो कि पर्वतीय धरातल को किस आभा द्वारा दिखाया गया है? यहाँ पास-पास खींची गई समोच्च रेखाएँ क्या बताती हैं? पठार के किनारे पर ढाल कैसा है? इसे समझने के लिए समोच्च रेखाओं की सहायता लो।

स्वाध्याय

पुनर्विचार

1. निम्नलिखित प्रश्नों के संक्षिप्त उत्तर दो :
   - (क) दिशाएँ जानने की तीन प्रमुख विधियाँ क्या हैं?
   - (ख) सूर्योदय हमेशा पूर्व में ही क्यों होता है?
   - (ग) तुम्हारे यहाँ सबसे लंबे दिन की अवधि क्या होती है?
   - (घ) वह कौन-सा तारा है जो उत्तर ध्रुव के ठीक ऊपर चमकता रहता है?
   - (ङ) तीन प्रमुख स्थलाकृतियों के नाम बताओ।
2. अंतर स्पष्ट करो :
   - (क) छोटे अनुमाप और बड़े अनुमाप के मानचित्र
   - (ख) तारा और तारामंडल।
3. पर्वत, पठार और मैदान की कुछ प्रमुख विशेषताओं का वर्णन करो। जिनकी मदद से क्षेत्र का भ्रमण करते समय इन स्थलरूपों को सरलता से पहचाना जा सके।
4. शंक्वाकार पहाड़ी, पठार, लम्बी पहाड़ी और घाटी को प्रदर्शित करने वाली समोच्च रेखाओं में क्या अंतर है, स्पष्ट करो।

प्रायोगिक कार्य

5. निम्नलिखित स्थलाकृतियों को समोच्च रेखाओं द्वारा प्रदर्शित करो :

(क) चपटे शिखर की समढाल वाली पहाड़ी

(ख) पठार, जिसके एक ओर का ढाल तीव्र और दूसरी ओर का मंद हो।

(ग) नदी-घाटी।

सम्बंधित क्रिया एवं विचार-विमर्श

6. "दिन रात की अवधि और ऋतु"

समाचार-पत्र से लगातार साल दिन के सूर्योदय और सूर्यास्त का समय लिखो और उनसे दिन और रात की अवधि निकालो। दिन-रात की अवधि और ऋतु के संबंध में जो-जो परिणाम निकलें उन पर आपस में चर्चा करो।

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NATIONAL SYMPOSIUM

TITLE OF PAPER: LEARNER-CENTRED APPROACH
(an answer to reach Education)

C.M.Thukral*

LEARNER-CENTRED APPROACH is a commitment to the development of the whole individual, his social, psychological and physical self as well as his intellect, which is also the goal of education.

Learner-Centred Approach is by no means a recent innovation by NATIONAL POLICY OF EDUCATION - 1986, it has evolved gradually over the years. This corpus of various programmes grew out of the deep conviction that education involves the whole person as an individual with **his** own needs and problems which must be satisfied and resolved, if he is to derive the greatest possible benefit from the academic aspects of his school experiences.

A comprehensive student centred programme looks to the learner's well rounded development - physical, social and emotional as well as intellectual. To these ends, a number of services administered or supervised by the institution should be made available to the school students throughout the country. They include the process of

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selecting the most promising candidates for admission into schools, assessing their intellectual and personal characteristics, orienting them to school life, controlling their academic progress, providing adequate food and housing, maintaining discipline, attending to their physical and emotional problems, offering a profitable extra-curricular programme and providing financial aid.

The present position of the learner world is a source of grave concern to all concerned with education. If we delve deep into the causes of this situation it will be evident that the close contact and cordiality which existed between the teacher and the taught of yore are now totally lacking. An analysis of the reasons leading to this state of affairs would be interesting.

The old Gurukula system of this ancient land was very healthy and led to harmonious and healthy relationship between the instructor and the learner. Alarmed by the wave of indiscipline and lawlessness so widely prevalent amongst the student community practically all over the country today, academicians have begun to think seriously and to wonder whether our forefathers in the generations past were after all sagacious and wise in their handling of students. This has focussed the attention of responsible

men and women to the need of building up closer contacts between the teaching world and the learner world and re-establish the relationship which once existed between them. This is mainly achieved through guidance and counselling which may be called a modern version of the ancient Indian system. It is hoped that by a judicious coordination of the best in the East and the West, we shall be able to evolve a satisfactory system to deal with this important problem.

A very narrow view of the concept of Learner-Centred Approach is taken when some educationists put premium only on interactive mode of teaching and discovery techniques of learning. Accordingly the learners participate actively in the teaching-learning process by posing problems, asking questions, collecting information, finding solutions to problems and answers to questions through their efforts, etc. The whole teaching-learning- process is geared to the development of learner's creativity. Different elements of school curriculum like content, methodology, evaluation, etc. are fused with the spirit of activity. Thus the learner-centred approach to education enables the pupil to cross the barrier of learning and leap into the territory of thinking. The learner becomes the subject of his education rather then the object of it.

Learner-Centred Approach is a generic service of student personnel work having a wide range of activities and includes faculty advising, counselling in psychological clinics, mental hygiene and other specialised type of counselling. It is a body of techniques which helps young individuals to grow up normally through guided learning.

LCA AND PRIMARY SCHOOL EDUCATION

The purpose of primary school has been the development of skills in reading, language, and numbers-skills needed to manipulate and deal with the environment; especially the man-made part of language, number, tools, machines, customs and the like. However, it has become increasingly clear that not only skills in the proverbial three 'rs' are needed but also that man must be able to live with himself and with other men. More than technical skills is required to hold jobs, maintain marriages, and avoid conflict between social groups. Understanding and accepting oneself, being able to join with others in common activity, knowing and accepting the rules and procedures of society, having realistic goals which are within ones capability and harmonious with the social order are as important as technical skills of numeracy, literacy and technicracy. These facts have been painfully apparent for a long time, but a sudden

awareness of man's capacity for destroying himself with his technological inventiveness, if he is not equally inventive in solving his social and political problems, has given dramatic urgency to the problem and its solution. In our industrializing urban society with its shifting structure, the school and particularly the primary school has to provide for these aspects of child development.

The educational goals set for the primary school need to include 'self-realization' and 'effective human relations'. These goals have been reflected at the secondary stage in the form of expanding guidance services or through learner-centred approaches. They must also form part of the elementary school education. To be effective, such a programme must function as an integral part of the school programme, not as an adjunct to an existing educational programme. The operational objectives of the educational programmes are described in its curriculum broadly as the sum total of what the child experiences in school; narrowly as the selection of tasks to be performed and the organisation of material and method of presentation for learning. Within any curriculum, the tasks to be mastered have to be organised into an arrangement which permits some systematic attack. This almost invariably places the emphasis on subject-matter

and skill rather than on developmental activity but does not preclude the latter. Yet it is in relationship to certain aspects of developmental activity that guidance exists as an essential aspect of the educational programme. The ways in which the lives of children are managed during the process of learning affects not only their progress of mastering the tasks confronting them but also the concept they develop of themselves. Daily experiences affect their feelings of adequacy, their fears and desires, their aspirations and hopes, their sense of self-worth, their perception and relation with other children and adults. Not only their cognitive development is being shaped but their personal and social developments as well.

These latter elements are the concern of guidance programmes or learner-centred approaches, an organised plan for promoting optimal development of children in the personal-social aspects of their lives. An organised plan implies specific objectives to be achieved in the area of mental health, personal adjustment, social relationships; as also for a division of duties between the available personnel in primary schools, for promoting development in these areas, and for identifying and helping those children experiencing adjustment difficulties; and planning and provision of experience in some sequential fashion in order to attain the desired objects.

The particular form and content of learner - centred approaches at the primary school level is nebulous and to be evolved. Two prime questions have to be answered, the first as to what the content of the approach should be, and the second as to what the relationship between guidance specialists and primary school teachers should be.

NATURE OF LCA AT SECONDARY SCHOOL STAGE

Secondary stage ecompasses classes IX to XII and the age range usually is 14+ to 18+ . On completion of the general education i.e. Class X which is called the lower secondary stage, there are three possible courses open to the students. (i) They can enter the working force (ii) They can take up vocational courses and (iii) They can take up higher level academic courses of study to prepare for entrance to the first degree classes in colleges or university.

The most important function of Learner-Centred Approaches at this stage is to help students make wise choices and help them in chosing their career. This being the adolescent stage students also need to be helped in the area of personal and social adjustment.

The specific objectives of learner-centred approaches at the lower secondary and secondary stage are :-

a) To assist the pupils understand their strengths and weaknesses

b) To enable them to secure information about educational and vocational world

c) To help them to make realistic choices both educational and vocational and plans based on considerations of all relevant factors

d) To assist them in searching solutions to their problems of personal and social adjustment in the school and home

e) To provide opportunities for vocational exploration and occupational information

f) To help them develop realistic occupational concepts

g) To provide self understanding with the help of Cummulative Record Card, and test results etc.

h) To help in the development of their self concept

To achieve these objectives at this stage, the following three services encompass the child-centred approach. These are also needed for providing a basic minimum programme towards the end in view :-

1. Individual Inventory Service
2. Information Service
3. Counselling Service

1. Individual Inventory Service. It aims at helping students understand themselves. This help can only be rendered if we know and understand them. Using testing and non-testing techniques, data and information about the students is gathered. Data about the students' family background, abilities, aptitudes, interests, achievements and other psychological variables is collected over a period of time and may be maintained in Cummulative Record Card. Since it presents a developmental picture of the students physical, intellectual,, social and emotional growth, it is of great help to understand them.

2. Information Service. It aims at providing educational and occupational information to students. It is a valid and usable data about all types of present and probable future educational or training opportunities and requirements, including curricular and co-curricular offerings, requirements for entrance, and conditions and problems of students life. It is also a data about positions, jobs and occupations, including duties, requirements for entrance, conditions of work, rewards offerred, advancement pattern, existing and predicted supply and demand for workers, and sources for further information.

3. Counselling Service. C unselling has been defined as face to face relationship. The counselling relationship is friendly, permissive and accepting relationship and not one way advice giving situation.

Different Levels and related terms

The word 'Counselling' is used very loosely. One would hear it applied to all manner of activities. For instance, Life Insurance Salesmen are sometimes called 'Counsellors'. However the core of counselling is the face-to-face interaction between a person who aims to help and a person who seeks help with making decisions and improving his way of life. We may discern three different levels of counselling:

a) "Informal Counselling" is done without any special training or very little of it. Some recent research as involved the use of slightly trained housewives in counselling mental patients. This research has shown the value of this kind of relationship.

b) "Non-specialist Counselling" is that counselling which is done as part of the work of professional people such as physicians, teachers, lawyers whose main speciality is in some other field, but who naturally make use of a great deal of counselling in their work, e.g. marriage counselling by Social Workers.

c) "Professional Counselling" is counselling by a fully trained person. He will have a Masters' degree in Psychology of Educational Psychology, Counselling Psychology coupled with post graduate Diploma or Degree in Counselling & Guidance, and will have had several years of experience in counselling. He will have had specialised training in testing and research, so that he can keep abreast of new advance in his field.

The aim of counselling is self understanding, self acceptance and self realisation. This involves helping the individual to understand his strengths and accept his limitations, understand the choices he faces - the opportunities open to him and the qualifications he possesses for the goals he has chosen. It also involves helping him to handle his difficulties in a rational way, make his own decisions and plans on the basis of self understanding, accept responsibility for his decisions and take action on the plans developed.

And now to conclude on a purely humanitarian note basically Learner-Centred Approaches are keyed to assist young people in the process of growing up and in the development of self-realiance and to learn through guided experiences. We all pay lip service to the doctrine of individuality, that each person is unique. We should try to translate some of this philosophy into action. Every young person needs a responsible and interested adult both inside and outside the family with whom he can talk seriously and without fear of reprisal or being laughed at. This is mere human kindness. To a bewildered young learner, leaving behind his home and arriving on a very new and different scene, the

availability of such services and persons can indicate to him a real interest and concern for his welfare. Not only would many students be grateful but also the author's own experience in the field has shown that there is real psychological satisfaction that accrues to the faculty person so engaged in such an enterprise.

NATIONAL SYMPOSIUM

TITLE OF PAPER: GROWING UP ...TH BOOKS

Ira Saxena*

Like children in the west, a public school-going child grows up with the logic of Mr.Spock, adventures of Star-ship Enterprise, star-wars, fascinating robots and adorable ET. They reach them through T.V., comic-strips and books. Today gigantic leaps of scientific development has pushed literature across the final frontiers of space into "a land where no man has gone before." Literature has grown with technology, thereby influencing popular reading interests. Science fiction is the in thing. Children are fascinated, young adults devour it and adults enjoy it.

Children's books for pleasure reading stirs their imagination and leads them into a 'brave new world'. The process is as old as literature itself. At one stage grand-mother's tales, the talking animals of Panchtantra, the creed of skyrovers known as Vidyadhar's, the rakshasa's and the valiant Prince's cast their spell just like Spiderman

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does now-a-days. The charms of literature, to be precise, a story grows upon the child as the child grows up with it.

Much has been written about the impact of books as instruments of knowledge that stimulate the intellectual process. A good literature programme encourages the development of knowledge about our heritage, establishes skills of literary analysis, fosters reading skills, enriches the information about subjects, and stimulates creative activities. However, the goal of literature is to promote enjoyment as a means of developing reading tastes, use it as a technique of gathering information from this leisure activity and, of course, life-time appreciation of reading material. The educational aspect silently glides into this activity, in turn, grows upon the reader as he grows.

The Principle of Repetition :

Listening to stories and poems is one of the finer ways to promote interest in learning to read. At a very early stage rhymes, rural or urban, amuse the growing mind . Fascination for music is a natural tendency. More than the meaning, the rhythm catches on when verbal communication

speeds up. The child keeps repeating the rhyme over and over again. This is nature's method to give the child practice in the performance of necessary biological function. The repetitive process is one of the principal methods a child has of adaptation to life.

Every child wants to hear the same story night after night. The parent may tire but not the child. For it serves the purpose of giving practice to a function, so the desire to have things repeated enables the child to understand and grasp the problem.

A child's favourite story at any stage of development represents some problem existing in child's own mind. The story presents the conflict and its solution. Until he comes to grips with his problem, he likes the story to be repeated. The famous story of Cinderella deals with the problem of a child being left out and unwanted - a common experience in childhood. The story gives the child a reassurance and he wants the story to be repeated again and again so as to establish himself in the reassurance.

Growth and interest :

As the child acquires maturity, begins to feel his independence and strength at the age of five or six, he becomes keen to shun authority. Now he loves stories of bravery and adventure where the hero overcomes all dangers and defeats the potent enemy in the end. Once the self-confidence is restored he outgrows the need for such tales. The fondness or solving puzzles and mysteries, enjoying secret codes comes with greater involvement with peer-groups. Stories of brave and courageous men and women, the eternal conflict of good and evil in realistic situations present symbolically child's own dilemmas. The solutions given in the tale are by and large the solutions the child is looking for. For all practical purposes the young reader incorporates suggestions mad by the characters to suit himself.

Literature that has childhood appeal, relates to age-specific trends and demands of the growth process. Likewise stories which satisfy the needs of the child find greater favour with them. The situations ought to be known, characters familiar and narration well within the comprehension for a story to interest. Through the pages of the book the child attempts negotiations with the complexities of

their ever-widening world. Impressions are pouring into them at a tremendous rate and the ability to cope is limited by lack of experience. The gap between new information and previous knowledge has to be filled somehow. Instances of threat from bullies at school, frightening shadows on the wall, wind tapping on the window and the sort, fill the child's horizon. Trivial though it may seem to adults, it perturbs the child sufficiently. In stories they find methods of resolving these conflicts, indirect suggestions to deal with similar situations in real life. In stories, argued Tolkien, we do not avoid issues, but confront them in the safety of a narrative defined for us by the conventional opening lines, "Once upon a time..."

Role of Fantasy :

Intellectual interests of a six year old child are strong and varied. He is curious beyond all bounds. Books not only help him learn but also analyse the purpose of learning. Fantasy contains his curiosity and fosters imaginative capabilities. They are pleasing therefore they inculcate aesthetic appreciation in literature.

Fantasy is the child's first introduction to abstract ideas. Children have subjective problems on their mind, but as they are extroverted and not introverted, they cannot solve these problems directly. They are worked out satisfactorily and objectively by hearing stories about others. Fairy stories are symbolic of child's own problems. Even though the child is frightened of the fantastic dangers, he likes to hear about them. Through these he is acclimatising himself to cope with harsh realities in future . At the same time reality is camouflaged in fantasy to suit the growing ego. Through fantasy the child is able to resolve many of his complexes, which otherwise would prove too harsh in reality.

An imaginary playmate is a well-known psychological phenomenon in early childh od and serves a number of purposes. As the child plays with imagined dangers, dominatin interfering authority, he breaks away from the restrictions that really provide him security, while all the while he has the reassurance that he is quite safe, secure and quite respectful because a fantasy is a fantasy after all.

"Escape, Recovery and Consolation" are the major functions of fantasy, claims Tolkien. Far from being escapist these stories help children to come to terms with

the world as it is. With story characters and imaginary playmates children confront reality helping them to mature.

Needless to say the modern fantasies, the science-fiction, not only build up imagination they also bring about awareness about the advances in science. Unlike a fantasy where descriptions arouse sensous appeal the science-fiction taps the reader's creativity. Moreover, predominance of scientific approach harnesses reasoning. The fact is endorsed by the modern child's preference for whatever appeals to logic. Their reading interests indicate that children are not easily convinced by tales of magic and splendour. They want to read something believable, particularly when they advance to the 'golden age' of reading.

At all ages, children's literature transmits its message so effortlessly that a child remains unaware of the education process. These messages stay embedded forever deep into the child's thinking. The Panchtantra which were created to make silly princes wordly wise are a brilliant example. Concepts about hygiene, environmental preservation universal human values, ideas of patriotism, national integration are better absorbed through an interesting story.

Among the different aspects of child-development, reading hastens improvement of vocabulary, verbal comprehension and language skills, most of all. It may be interesting to note, when the colourful world of children's books are brought before a group of rural children the attraction for reading grew like a contagious disease. Children competed with each other to finish a book, read out stories to their siblings and boasted about the number of books they had read. While Hindi, being their mother-tongue, was the preferred language, many loved to turn the pages of beautifully illustrated children's books in English. Some tried to read, and they did manage with little assistance from the librarian. The fever caught on, more children were demanding books in English. It soon became a status symbol to have read a story book in English. Interest in the language which was regarded foreign and difficult so far, also grew and so did the achievement level of many in their classes. These observations were made at the Children's Library at Sankhaul which was organised by the Association of Writers and Illustrators for Children. It is a project undertaken by the Association to encourage reading habits among children.

"The right time for the reading habit to grow is from childhood upwards," said Nehru ji during Children's Book Week in 1959. "Unfortunately, the people who decide as to what book to write and publish seldom take into consideration what a child really wants," he said. Since the New Education Policy also stresses on the non-formal approach towards education, it is desirable to prepare interesting books on a variety of subjects keeping in mind the principles of writing for children. Such an extra-reading material can supplement and complement the formal learning at school. To encourage reading habits, children's libraries, almost at the door-step, could provide the necessary encouragement. However, for the success of any such programme the fundamental requirement would be books, books in abundance, books for all ages and books on all subjects. After all, an attractive colourful book with lots of pictures, information, interesting narration and no sermons is what a child looks for, be it a book on environment, history, science, a dictionary or even a simple adventure story.

TITLE OF PAPER : CHILD CENTRED EDUCATION - OCCUPATIONAL INFORMATION NEEDS

D.S.Rama*

Human resources development is necessarily to be assigned the key role in any development strategy, particularly in a country with a large population. Trained and educated on sound lines, a large population can itself become an asset in accelerating economic growth and in ensuring social change in desired directions. Besides knowledge, education develops basic skills and abilities and fosters a value system conducive to, and in support of, national development goals, both long term and immediate. The expansion of educational facilities has helped to some extent in the correction of regional and other imbalances and in achieving progress towards equality of educational opportunity and social justice.

The child centred education may be described as a pattern of education in which the total development of the child, at a particular age level is taken into consideration. In our country, the educational pattern has been mostly school-oriented not giving due consideration to various aspects such as aptitude and interest of a child. The

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main function of education, I consider is the development of human resources. Human resource development is linked with manpower planning. Manpower planning concerns with meeting the manpower requirements of various sectors of economy. But you will see on the one hand while all round unemployment is growing very rapidly since 1st Five Year Plan, on the other hand, number of jobs remain unfilled for want of suitable candidates.

The imbalnces in manpower as well as advance action regarding choice & planning of a career have generated a need for disseminating realistic occupational information, at various levels. Today, we have more than 5 lakhs primary schools and about 66,000 high/senior secondary schools (including intermediate colleges) in our country to impart education at school level.

The Shiva Rao Committee in its report (submitted in 1954) inter-alia recommended compilation and publication of career information for use in guidance work at schools and Employment Exchanges. In pursuance of the recommendation, the work of preparation of career publication was taken up in DGE&T in the year 1955. This programme received impetus in 1970 when the Committee of Secretaries recommended strengthening and intensification of vocational guidance

and career counselling pr gramme. Consequently Career Study Centre was set up in CIRTES in the year 1970 with the following objectives:-

i) to build up necessary information on employment and self-employment opportunities

ii) to disseminate pertinent information for guidance of students and work-seekers; and

iii) to ensure that the information is disseminated properly to the users and career counsellors are properly trained to provide guidance services.

Central Institute for Research & Training in Employment Service (CIRTES) has produced career literature in various forms viz. Career Information Series/World of Work, Job-Seekers' Guide, etc. to meet the specific requirements of its consumers. The literature produced by CSC is mainly meant for those who have atleast passed 10th standard. The complimentary copies of our publications are made available to educational institutions, important libraries and employment exchanges. Besides CIRTES, NCERT also produces career literature.

You will see whatever the pattern of education we have, it would be more appropriate to evolve some system to provide occupational information as part of course at primary and middle level education. Eminent educationist like Prof.P.L.Malhotra has also emphasised this point time and again.

The school leavers, in the absence of any occupational information are not able to plan their career or further education and in case of drop-outs the situation is still worse. They do not know anything of the World of Work. They are forced to enter labour market, accept any economic activity without caring for monetary consideration and future employment prospects and their ability. This creates frustration among them.

Providing educational information as a part of syllabus at primary and middle level education will not only be beneficial to the school leavers but also help drop-outs in planning their careers. If child centred education is to be developed in this country, it is a must that we should include career information in the school curriculum at a particular level for a particular age-group in the form most appropriate to that level.

NATIONAL SYMPOSIUM

TITLE OF PAPER: ORIENTATION OF EDUCATIONAL ADMINISTRATION AND PERSONNEL RESPONSIBLE FOR INSPECTION AND SUPERVISION OF SCHOOLS IN THE CONTEXT OF IMPLEMENTING CHILD-CENTRED EDUCATION IN SCHOOLS

R.K.Kulshrestha*

'Spare the rod and spoil the child' used to be a popular maxim which we in India had in legacy from the English rulers who would like to educate the Indians but without being allowed to raise their heads beyond 'the shackles of slavery' permitted. They wanted obedient educated Indians to assist them to run administration. Thus they obliged the Indians by this kind of partial education but at the same time enslaving them culturally. Thus we often hear such expressions even now such as " Mr......... is a very tough man, he keeps cane. No one dare go to his office." "I must complete the work of x teacher otherwise he will twist my ears." Even more autocratic and domineering teacher behaviour can be seen in several shools. Perhaps they have not been able to free themselves from the concept of 'rule of rod' in class room. Perhaps it is easier to control children through fear and quite

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difficult to control them through intellectual effort and individualised instruction. Therefore this issue of child-centred approach in education was highlighted even by Secondary Education Commission 1953, Kothari Commission 1966 in the form of diversification of courses, importance of counselling services and Activity Orientation. But the NPE has meaningful laid a great stress on this aspect. Importance of the child is to be felt at all levels by Educational planners, Administrators, Teachers and even parents. It is therefore relevant to recall Dewey's 'Democracy in Education' which in a way suggests particiratory approach in education.

Dewey's concept of Democracy in Education perhaps reflected that all was not well with the process of education. Due importance was perhaps not being given to the most important component in the entire educational effort. The child is the most important part in the process of education, neither the teacher nor the curriculum can be treated so significantly. Child is the axis around which all educational effort rotates. Take out the child and education becomes meaningless. Take out the teacher or text books, education can still be imparted - may be not so effectively.

The POA of NPE stresses child-centred education which reflects and recognises the personality of the child who is a complete independent entity - mind, body, emotions, friends and family - with individual requirements, cultural, educational, social etc. In most of the schools even today child is given second hand treatment, somewhere even the third hand. More importance is given to teacher and the text book and the process of evaluation. Even in the so called progressive schools and public schools corporal punishment is given to the child on minor faults. This may begin from 'stand up', 'hold your ears' to slapping and caning. In such cases, even the more intelligent and fertile brains are forced to disbelieve the sacredness of the goals of education and their performance in general deteriorates.

We adults are generally in the habit of under-rating children whether in a family or in a school and subject children to all social restrictions, which are more convenient to us. Thus we mar all creativity, imagination, self-confidence and sense of achievement in children. In a class room situation also a very big percentage of teachers would like to force their point of view on the children rather than understand children, listen to their

questions and querries, involve them in a discussion, take advantage of their experiences, or even create a situation in the class which should be more interesting to them and involve them actively in the educational process.

Child-centred education presupposes a thorough understanding of a child. Every child is an independent physical, mental and emotional entity. No two of them are physically or mentally alike. Their socio-cultural and socio-economic backgrounds are entirely different. Therefore a teacher must properly know every child in the class with reference to various factors raised above. How to deal with an average child, a gifted child, a problem maker, a truant, a backbencher, a scholastically backward child, an unsocial child, a physically deficient or handicapped child, a child coming from poor strata, a child from SC and ST etc., meaning thereby that the individuality of each and every child must be recognised. Every child in the class must be accepted as a whole unit for education under various limitations which the teacher must sincerely try to reduce as much as possible. He may have to give extra time, do special counselling, discuss with parents, recommend financial assistance and other grants, suggest special books, give special assignments, develop special technique of teaching based on a situation.

As an Administrator or Inspector certain measures are suggested to be taken in the context of child-centred approach in education but before elaborating on this I may like to emphasise the fact that we all must watch and direct the energies of the children carefully if we want to improve society or strengthen our nation. Children in general do not inherit abilities. They become able and capable of doing good deeds in the company of and under the guidance of we adults which include parents and teachers. It is therefore imperative for both parents and teachers to be watchful about their own behaviour, their sense of duty, their system of values. Good, righteous parents and teachers had always produced good children, good citizens and responsible officers.

The officers and administrators in the field of education should themselves be well aware of various factors which govern the behaviour of the child. Apart from self study, some seminars and workshops can be organised by the Department of Education to orient the officers which they in turn carry out in the schools under their control. In this orientation programme, experts from NCERT, CIE, SCERT, EVGC, Psychiatric Centre, Delhi University and even from medical colleges be invited for guidance

and discussion. A well oriented officer shall evolve some practical measures to implement the child-centred education. He may have three-tier approach by way of implementing child-centred education.

1. Class room and school-centred supervision strategies.
2. Administrative Policy, Planning & Assistance.
3. Liaison with other Agencies/Experts and Public and private entrepreneurs with an eye on futuristic goals, specially with reference to vocationalisation of education.

1. Class-room and in-school supervision strategies
   (i) Does teacher display an understanding of the working of the mind of children which according to Roussou is the best text book ?
   (ii) What efforts is he making for character building of children through Assembly programmes, Speeches, Activities-cultural and literary, House System.
   (iii) What efforts are being made towards physical health of the children - games and physical education, health check up, hygiene consciousness, periodical medical check up. What place is given to them in the school organisation for such services.

(iv) Children's expressions should be viewed from their own point of view not from the point of view of the teacher.

(v) The teacher should know the activity potential of the children, their creativity and provide facilities to them to develop naturally.

(vi) Does the teacher know how to make their lesson interesting so that the minds of children do not waver or divert from the lesson.

(vii) Does the teacher understand the instinctive behaviour of children and their emotional problems, and think of certain 'Activity outlets'.

(viii) Does the teacher sympathetically understand the problems of children rather than call such children problem children. There should be sincere efforts on his part for solving them.

(ix) How does the teacher supplement the lesson by organising educational visits, excursions, using models, charts, film projectors, etc in the class and use aids to improvise in a class room situation.

(x) Does the teacher adopt 'Role Distribution' in a language lesson for personalisation.

(xi) The teacher must display understanding of 'sense organs' imagination, memory and their functions in the best interest of children.

(xii) How are the 'gifted' and 'backward' children being handled. What different techniques are adopted?

(xiii) The teacher must also know the role of hereditary and environmental factors in children's growth.

(xiv) Does the teacher handle the questions from children in appropriate manner?

(xv) Does the teacher want perfect silence in the class? Or, he does not even bother about the noises from all sides in the class.

(xvi) Does he meet parents periodically to discuss various problems of students only for complaining about or primarily apprising them of their achievements and discussing how best to improve the child.

(xvii) Does he make use of EVG Counsellor for certain cases which he thinks are not normal?

(xviii) Does he maintain a diary about the children with special needs ?

(xix) Does he compare two children and then praise the one and scold the other?

(xx) Does the teacher through his word and action try to establish certain social and notional values, such as, unity in diversity, cooperation, tolerance, secularism, dignity of labour, equality of all, etc.

2. Administrative Policy, Planning and Assistance

Apart from these 'Inspection Measures' there are certain administrative steps also which may go a long way to implement child-oriented education in the schools. A zonal officer has around 50 Senior Secondary/Secondary/Middle Boys and Girls Schools, some of them aided and unaided recognised schools, with a student population of about 30,000. Excursions and visits to places of educational interest can be encouraged by not only giving the schools administrative clearance but also by mobilising certain funds for such outdoor educational opportunities.

As an Administrative measure provision of suitable staff is a vital need of school children. The Administrator must accept this responsibility and see that the students have proper teachers for the proper jobs.

He will also ensure that teachers carry out their duties satisfactorily and are held accountable for any kind of lapses which may have undesirable effect on children's growth, their behaviour and also on general tone and discipline of the school.

The officer concerned may keep close liaison with EVGC Branch and in collaboration organise regular seminars, lectures and workshops with a view to educating teachers in various behavioural aspects of children, their needs, instincts, their personal, educational, psychological problems etc.

3. Liaison with other Agencies/Experts and Entrepreneurs

The officer concerned may also have linkage with the Health Department and Psychiatric Social Worker and seek help in cases of physical deficiency and psychological or mental deficiencies of children. He may arrange visits of such experts.

The officer may also call a staff meeting of the entire staff on the day of inspection and discuss with them problems of children and how best to attend to them and solve them in their best interest.

Activities involving mass participation shall always be encouraged by a good supervisor or officer. These may include Cultural Activities - dramatics, musical items, dances, fancy dress shows; Literary Activities - Calligraphy, Recitation, Debates, Essay Writing, QUIZ, G.K.etc, Physical Activities - various games, sports, athletics, yoga show etc. Instead of involving one student in a number of activities, the teacher incharge should see that different children participate in different items as much as possible

Performance recognition in the form of 'incentive awards' be given at a school function and display of all children should be appreciated with a view to motivating them for a better performance. Token prizes and certificates should be distributed to as many children as possible. No child should be allowed to have any kind of discouragement.

NPE envisages phased vocationalisation, a practical step in career making of students. Linkage with business executives, factory managers, commercial establishments - Public and Private must be established

where the students can go for practical training and from where experts could be invited for practical guidance and where the children may have career prospects.

The Administrators and Inspecting officials have an immense responsibility in creating a responsive climate for implementing the child-centred approach in education. The task is not easy but all the same it is not impossible. The lines of Robert Frost should be the guiding torch for all of us so as not to allow our enthusiasm dampen and proceed with strong optimism of the star poet:-

Woods are lovely dark and deep
But I have promises to keep
And miles to go before I sleep
And miles to go before I sleep

NATIONAL SYMPOSIUM

TITLE OF PAPER: CHILD-CENTRED EDUCATION: GENERAL CONSIDERATIONS

S.K.Mitra*

This is not the first time that Child-Centred Education is being emphasised. In the history of education, we find that it had received attention much earlier, particularly in the Western countries. In the last report of reforming elementary education, including pre-school education, in Great Britain, child-centred education had received a good deal of attention and emphasis. However, in the Indian system of education we had paid attention to other things, but not so much to the child *per se*. We can say that, in a sense, all education is child-centred, but the child was taken for granted and was not the focus of attention. Thus, we have been concerned with the pressure of increasing child population and, therefore, there has been a good deal of attention to additional school buildings and the funds for the same. Any additional enrolment in school requires not only space, but also furniture, equipments, books, etc., and therefore, there is an increase in cost. We find, thus, there has not only been a

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demand for more school buildings, but also more funds, and in both these respects, we have been in short supply. The Education Commission's Report 1964-66 received a good deal of attention and the school structure in terms of 10+2 system has been brought into existence after persistent efforts, but little attention has been paid to the child. It is, therefore, appropriate that in the new education policy, an emphasis has been placed on child-centred education.

Curriculum is an important aspect of education and a good deal of effort is necessary for curriculum development. In developing a curriculum, one considers a number of things including the age of the child. Therefore, one can say that it is true that the child is not in the centre of the educational process. Likewise, in teacher training, which is another important aspect of the development of teacher competence for the delivery of the curriculum, developed for the child, there is always an inclusion of some child psychology. A difference is made between the kind of competence required from teachers and from young children as against teachers and older children. From such considerations, it is obvious that even in teachers' training, the child is not left out.

One other aspect of school education which is equally important is evaluation or examination. Again we find that evaluation for the young child is very different from the evaluation of the older child, in the methodology that is considered relevant and useful. So, in the three aspects, namely: curriculum, teacher competence and evaluation, the child enters in the consideration of the kind of things which are talked about, discussed and written and materials are prepared for the teachers and others.

In text-book preparation, the child is of course very much in mind in the development of text-books. Thus, the text-books for the young child between the age group of 6-11 yrs. and the child between the age group of 14-16 yrs. require different considerations and emphasis, and good text-books are those which are written from the point of view of the child's abilities and interests of different age groups. It will not be, therefore, appropriate to say that the child is not in the picture in the development of text-books. The language of text-books for example is to be appropriate for the child for the particular age, and even the illustration of the text-books. We have to follow the mentality of the child of different age groups. Hence, to say that child has not been in the consideration of

educational development is not true. On the contrary, since independence, and even earlier, child has been very much in the picture. When the DPI of a state certifies the prescription of a book, he has to take into consideration the characteristics of the child of certain age groups who are likely to be the users of the text-books. Educational administration, in other words, and particularly Inspectors of schools, have been very much aware of the importance of the needs, abilities and characteristics of the child.

The question then arises what is meant by child-centred education. If the child has always been in the picture whether it is a school building, furniture, equipment, text-books, teacher, curriculum, evaluation, and so on, then what else is involved in child-centred education. In other words, we have to make it clear to ourselves whether there is anything new in the concept of child-centred education, or is it only another name for what has been going on for quite some time now. I welcome the convening of a conference by NCERT on this subject at this time in order to elucidate the national policy of child-centred education as expressed in the National Education Policy.

I think that there have been some developments in recent times, i.e. last thirty years or so, which make it important for us to develop suitable changes in our system of education. Thus, for example, we have known much about the language development of the child than what we knew earlier. I remember that in our childhood the books that we had to read were written in a language which was difficult. It was an adult language written by an adult author. Even the illustrations, or the pictures, in the books were standard pictures produced by adults for adults. Only they were made part of the book meant for the children. In the matter of language, we have learnt that there is a process of development of language competence in the individual child which follows a pattern which the child shares with other children of the same age group. Likewise, we know that children in the rural areas of our country develop linguistically, not exactly in the same manner as the urban child, particularly the children in the metropolitan areas, like, Delhi, Calcutta, Bombay, Madras. It is no wonder that these metropolitan areas' children, later on as adults, come to occupy some of the best and top-most positions in all walks of life, wherever language competence plays a part, and we know also that language competence enters into the development of the verbal abilities of various kinds as well as of intelligence

and, therefore, the boys and girls of these metropolitan areas score higher in any competition over the rural persons. It is not as if there is something God has given to the young adults of the metropolitan areas which/them superior to the village boys and girls. The environment in other words makes a difference. The environment makes a difference not only to human beings but even to plants. Plants have to be saved from disasters because of enviornmental events like chemicals in air, water, soil and so on. Likewise, the environment in the villages does not provide the kind of equipment .which the metropolitan urban areas provide. The point for our consideration is whether in education, we have in our focus the difference between the rural child and the urban child, from the point of view of language competence. They have to acquire a language competence which is very similar, if not the same, but to start with they are very different, and, therefore, unless care is taken in terms of the child, whether it is from urban, or from rural areas, any instruction, curriculum, text-books, etc., it is not likely that the rural child can make up for the deficiencies that are created very early in his life.

We can argue that an implication of such a situation means development of alternative educational system, appropriate for the rural child, which should aim at, later on, merging into the same system of education as the urban child, by developing the kind of language competency which is necessary, in order to develop the abilities to comprehend, analyse, synthesize, appreciate and evaluate, whatever educational materials and other experiences to which the child is exposed. In a vast country like India with inadequate resources for education, it may appear that even to think of an alternative system, which merges into the same system later on, will make education much more expensive, and, therefore, is not solution. But what do we do, if we find that even in the case of the health of children, there may be a similar situation. It seems that the answer is obvious that we should overcome the environmental problems of rural and urban areas, in order to develop the health of our children to the same level of efficiency irrespective of their original birth place, whether rural or urban. In education, therefore, if it means more expenditure, the funds will have to be found. There is no short-cut. One can argue that how is it that many Indian students going abroad do so well in the higher education system in some of the western countries, like, USA. It is true that Indian scholars in British, American, German and

other universities have proved their merit, time and again, and earn universal respect as scholars, scientists, technologists, doctors and so on. But this does not mean that we should encourage the same kinds of things in our own country, where we know that although a number of students from rural areas are making their mark in national affairs in science, technology, art, commerce and so on, their number is small, and in terms of percentage of population is very small. Certainly, it is worthwhile to consider whether the pool of talent in our country will not increase considerably, and, therefore, make the country as a whole better and more competent, if by spending more in education in overcoming the difficulties of the rural child, we create conditions at an early age for the rural child to catch up with the urban child, particularly the children from the metropolitan areas.

The word 'child', in child centred education, helps in delimiting the scope of discussion. Child centred education covers the period of early childhood education and primary education. By and large, one can see that there is a lop-sided emphasis in early childhood education and primary education, both, on text-books and memorization. One should, in this context, think of the large number of primary schools in our rural areas. Facilities of early

childhood education are to be found only in the towns and cities and in the metropolitan areas. One may find highly sophisticated nursery schools, kindergartens and so on. Although, the Education Commission recommended the play-way method in the first two years of primary education, there is hardly **any** play worth the name. It is a matter of drill, whether it is reading or writing or arithmetic. We see plenty of stero-typed pictures of such schools in the films, which are shown from time to time.

John Dewey, towards the beginning of the century, engaged himself in a very powerful criticism, expressed through many of his writings, speeches and so on, against the American system at that time, and emphasised activity method, which is in keeping with the age of the children. Any student of the history of education knows the project method that was introduced, the Dalton plan, the Winnetka plan and such other varieties of methods to break-down the classical approach of treating the child as a miniature adult or adolescent. The work of Piaget did not have an impact until the thirties, because Piaget's works were not translated in English. The emphasis on child centred education came at that time in order to highlight, negatively, the defects of the existing system focused on everything else except the child. Punishment of very young children was very

common, and in our country it is still prevalent. But children, by nature, tend to be active, and, therefore, become restless after sitting in a particular posture in the school for some time. Considering the fact that the nature around the school in our villages is highly attractive as compared to the dull ill-lighted, ill-ventilated class rooms, the children have a natural tendency to go out and play. Tagore has capitalised on this and in Shantiniketan there were no class rooms, to start with. Classes were held in the open under trees. One can see it even now.

Child centred education emphasizes the need for taking care of the child, or its growth and development, as a part of the process of education. It requires individualisation of approach, so that one has to study each child carefully, keep observations, over a period of time, recorded, study the growth and development in sensory-motor area, intellectual area, emotional area, social area, language area, and so on. The rates of development in these various areas are not the same, and there are individual differences even within the same area. It is noticeable that some children tend to avoid the quantitative aspect of arithmetical work. A little study of Piaget will show that there are stages of development of children and

our teaching will have to relate to that. There is no point in emphasising abstract concepts, when we know that in the development of intelligence the formal operations of thinking start much later.

In much of our teacher's training in the elementary stage, we may teach them, i.e. the teacher trainees, Pestalozzi, Froebel, Montessori, and the views of some others, later on. However, as many of them have told me, when the teacher comes to face the children in the village class room it is a different story. I have seen myself that three classes may be sitting with their backs to the walls, three walls providing the three class space. It is a pity that even now 40% of our primary schools are single-teacher school. Is it any wonder that 60% of the primary school children drop-out? Child centred education strikes at the root of this all, because you cannot make education child-centred unless there is proper space, time, physical equipments, teacher preparation, adequate arrangements for play, toys, facilities for making things with one's own hands, and so on. A large portion of the children who drop out, in the first three years of primary education, do so, because education is hardly inspiring. A person like Tagore became a drop out, and his description, although it is dated, of what happens in

the school with the teacher using his cane, perhaps remains true of many similar situations in our country today. It is, therefore, very appropriate that in the new education policy (NEP) child centred education has been emphasised.

There is nothing mysterious about it. The child has to be the centre. It is this evaluative aspect of the entire educational practice, which is important. It is alright, later on, to talk of science, mathematics, grammar and such other subjects. But, in the early years, when we are dealing with the child, it is not the subject as such, but the child as such, which should be emphasised. Like, for example, in health education, it should be possible to teach the child many things about health, human body, eating habits and, therefore, of the commercial system and so on which cut across various disciplines. Likewise, if air and water is subject of study, it is not just physics or chemistry, but many other things and other subjects will enter into the teaching about air or water. The important thing is to allow the child to pursue his/her interests in knowing and understanding more and more about water facilities. It may include the reading of maps and locate the ocean, lake,sea, river and so on.

There are various things, one can talk about when one thinks of flexibility in curriculum, lesson plan, books and other instructional materials, instructional methods and learning strategy, etc. in order to make education child-centred; but we need not elaborate further at this point.

TITLE OF PAPER: CHILD CENTRED EDUCATION - THE CONCEPT AND FEASIBILITY

Snehlata Shukla*

The desirability of education to be child centred has been long recognised in the history of education. This is specially true of education of the younger children. Rousseau wanted Emile to get full attention of an ideal teacher who would stimulate, inquire, suggest and support Emile's quest for knowledge but not instruct or tell. The teacher would have to be alert to look for signs of new interests and provide stimulation for further growth. But Rousseau had only an elite group in mind in this one pupil one teacher system. Somewhat similar system had prevailed in ancient India where a few able pupils, often sons of rulers and other elite groups who would control the society, received education from a learned Rishi. There was no conceptualisation of a public system.

Froebel too recognised the differences in innate capacities of children and importance of experience. But his scheme of experiences was too organised and controlled, loosing in the way the sympathetic insight of the guiding

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adult so essential for differential growth. His scheme differs from the traditional experiences of education in that it uses concrete objects and hence involves very much more physical activity on the part of the children which makes differential pacing of learning and self discovery by the children more possible. But its application got limited to early years of education only.

Deway while emphasising the importance of experience based education also recognised the need of keeping the future life of the children in mind. The children would

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The theory was not the same for Sophy who was to be 'trained' to perform the roles of a wife and a mother. This would no longer be acceptable - not these days of feminist movements.

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explore a specially created balanced environment to learn and discover their own dispositions. His views differ from Rousseau's elitist and near totally free education as also from highly structured set of experiences expectedly leading to some latent unfolding of Froebel. He realistically thought of a rich and specially created environment for children to experience and learn from.

In more recent times Ivan Illich has criticised schools as manipulative institutions having predetermined narrow objectives of preparing children according to the demands of the society. He too pleads for the freedom of the children from this restrictive system so that they may learn at their will.

In India, Mahatama Gandhi propogated activity oriented Basic Education and tried to lessen the burden of rote verbal education. However, its origin was not totally in the concern for the optimum growth of the child. The revolt against the prevalent foreign rule was intimately woven into it. Basic Education was expected to be economically self sustaining that would enable the country under foreign rule to help itself (its children) to education without the financial support that the public systems do need and which was not being provided by the foreign rulers. It was partly educational as the educational system at that time was narrowly geared to the preparation of manpower to support the British administration in India without any regard for the development of the children as human beings.

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There have been centres of education in India where growth of the individual - social, cultural, spiritual, moral and intellectual have been the main concern of the institution, and not acquisition of a foreign language and arithmetic. Shanti Niketan is one such example. Several other instituions, called Public Schools had a combination of the two - a highly structured somewhat old fashioned curriculum designed to acquire the skills and competencies which would be required to man, in this case, higher level position in administration and a liberal education suitable for the growth of a child as an individual. These institutions provided and they still do, a great deal of Dewey's specially designed environment where children explore and find their own dispositions. But these Public Schools provide education to a small group of children, selected not necessarily on the basis of merit but on the basis of economic means of their parents. The Public Schools charge high fees to maintain their superior system of education and are out of reach for most of the parents. I would, therefore, concentrate on the public system which caters to the majority of the children.

The system has, in effect, changed very little in its approach. It still prepares manpower for job placements - the jobs have changed in variety and level. On the face of it this would seem true only of higher levels of education but the lower levels tend to be preparatory for the next stage of education. The educationists in independent India have rejected the implicit approach and pleaded for education for the development of human beings. But the change in the classrooms has been very slow and near negligible. The biggest hurdle has been the examination system and the value attached to the certificate awarded at its successful completion.

Nearly four decades, after independence have been spent in extending educational opportunity - whatever it meant, to those who did not have it earlier. The number of schools have more than tripled during 1950-1983. Though there have been attempts to make education more relevant to the changing times and needs of the country, little has been done keeping the child (the student) in mind. Even the pré primary education, considered so essential for social, emotional development of children found limited support from the government beyond lip service. It has, however, been realised, that quantitative growth alone is not meaningful and that qualitative

improvement in education is as important or rather more important. Thus in the National Policy of Education-1986, it is stated: 'A warm welcoming and encouraging approach in which all concerned shared a solicitude for the needs of the child, is the best motivation for the child to attend school and learn, A child centred and activity-based process of learning should be adopted at the primary stage------'.

It is obvious from what has been said earlier that 'child-centred' and 'activity or experience based' education have been considered synonymous. The reference in the policy document is to the 'child centred and activity based process----'. It is also considered meaningful for the younger age group (only). Is the spirit of child-centred education really limited to the process and restricted to younger age-group? What does child-centred education mean? Taking our cue from subject-centred approach, child centred education would be an education or set of experiences that would lead to the optimum development of each child; according to his innate potential. But the analogy ends here. The subjects are few in number, say ten or twenty or a few more at the school stage which can be unfolded in a systematic planned manner with the help of well prepared material in the hands

of competent adults. The 'competent adult' can spend sufficient time in understanding/mastering the subject that would be unfolded. But the children are not inanimate subject matter which remains unaffected by the physical or social environment. Each one has a unique mind of his own, with different physical, emotional and intellectual capacities. It would not be easy then, to provide for a group of children an education that would be strictly child centred.

The activity based is opposed to verbal education, depending on rote memory and mechanical repetetion or reproduction of verbal symbols. A young child may learn the number system to begin with by memorising 'one, two ...... without grasping the meaning of eight or nine or it may handle various objects and start understanding what the words 'one, two...... eight, nine------' stand for. An activity based rigid curriculum may ignore individual interests, needs, pace of growth and may not be learner centred. But the activity based education provides better opportunities for discovery and self expression. It also permits the child to follow his interests at his own pace. Thus stands its importance in child-centred education.

The society, that is, the adults, have never given up their right to mould the coming generations to help achieve their (adults') goals. The political, social systems have definite ideas what the society should be like, say, twenty years hence and they help or restrict growing generations to mature into adults as would help realisation of these dreams. It, therefore, educates the young selectively and purposefully. Those who choose to go their own ways to find their happiness are usually stamped as delinquents. The reference is not restricted only to those who would tread on the rights of others to live as they wish. A few of them would contribute positively to the society.

The controls are stricter than we imagine. Some emerge from very positive and helpful thoughts as the young ones are in no position to think of the future or have, as yet sufficient experience to choose from but others not from such positive sentiments. That everyone must learn science today so as to be able to live in a technological society is fine but every one must learn science so that a nation can identify and train young scientists for star wars is the negative approach in controlling children's experiences. Asking all children to learn three languages in India is to help maintain peace in a political situation, one may argue that it would

help children to live meaningfully in a multilingual country, but the need does not arise from the concern for optimum growth of the children.

Forgetting the negative stances, control there has to be. What children learn and experience or do not learn/ experience would affect their later lives. The young cannot judge what is best for his future needs, not only be does not know the future, he cannot. unlike an adult, even surmise its picture. He cannot decide what is good for him, in the true meaning on any adequate basis. He knows only his immediate and short term interests as he still needs to experience a great deal more to explore and understand his own interests. The exceptions are very few. The adults, in this case, the parents, teachers and the educationalsts also do not know what the future would demand of these children or what their inclinations are, but based on their experience of the environment, understanding of the signs of coming changes and the likely growth pattern of the child, the adults are in a better position to select opportunities for the best growth of the children.

The foregoing paragraph seems a good recommendation for status quo. After all the adults have designed the system of education, curricula, textbooks and education of those who would facilitate its implementation; all of which would provide opportunities for desired growth of the children. The difference is that this has to be seen as a big ground with provision for numerous games from which the children would select some for themselves. Within an arranged environment the child needs to be given wide freedom of choice. Generous allowance must be made for child's interests and for self expression. The children need to be exposed to a large number of experiences under the careful watch of perceptive adults who can rearrange the learning environment suitably keeping in mind the interests of the children- that of the present and future as well. It is absolutely necessary that children to read, to socialise to participate in group activities, to respond to animate objects and people so that the opportunities of their future development are not restricted.

The school in India are providing only limited experiences for learning the basic skills and acquiring some knowledge in a very rigid framework. The opportunities for extended experiences hardly exist. School consists of classrooms, teachers, textbooks, in some cases laboratories, library and playground are also thrown in. The material, space, time and adult guidance for exploration, self learning and self discovery is just not there. The worst of all the sensitivity of the most important adults in the life of the child to the importance of such opportunities is not there.

The first adults to provide a child-centred-learning environment to the children would be parents. With a majority that is uneducated-even illiterate, the understanding and appreciation of it does not exist. The children are seen either as mini-adults or adults in the making who must be prepared to live adult lives in a pre-determined fashion. The childhood is not seen as part of life to be lived as enjoyably as youth but is something that has to be put up with. Its end is sought as early as possible by the poor communities. The parents, themselves, on the average, have had poor opportunities of growth, little exposure to the world beyond the struggle for existence to recognise the needs and interests of their children. Much less is their capacity to do anything positive in this regard.

Teachers, the specially educated group made responsible for the education of the young are only a little better than the parents. They may have some understanding of the growth of the young and appreciation of the stimuli for optimum growth but it is not emphasised as much in their teacher-education programmes as 'methods' of teaching subjects. Moreover they lack the facilities of space and materials to help children explore and learn. System of evaluation and finally external examination curb any insight and enthusiasm as the teachers may have for optimum growth of the children. The teachers are ultimately judged on the achievement of their children in such scholastic activities as can be examined through performance mainly on written tests. The fate of well intended curricula for broader experiences, the achievement in which is not 'measured and given scores' is well known to us. Because of the scarcity of job opportunities, the society (the parents) would also have the schools manage 'the scores' rather than education. It may also be remembered, that school is only one of the agencies helping children to attain their best in physical, emotional, social, moral and intellectual growth. The family, community and the religious instituions wherever they exist also play a role. Schools have a special responsibility for intellectual growth and only a limited role in other aspects of growth.

In poorer societies, to be what one wishes to be is a luxury few can afford. The struggle for survival 220
may leave little room for a meaningful life. Exceptions can be quoted but they do not make the rule.

What then is the fate of child-centred-education in Indian schools? The parents are not interested, the teachers are not educated to facilitate, it. The schools do not have the facilities to provide it and the society does not provide opportunities for growth that it cannot comprehend within known parameters.

Some efforts have been made to widen the experience of the children. Wider curricular experience wer made available to all children upto ten years of schooling. Socially useful productive work, now, Work Experience forms an integral part of education. Education in arts including music has also been promised. Physical education too has been a part of the curriculum. But even at the prescribed or suggestive level the framework is not sufficiently broad. It is very limited in its implementation.

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As mentioned earlier, the three big hurdles in implementing child-centred education are (i) the premium put on the certificates issued after the secondary school (and later examinations) for getting job placements or opportunities for further education (ii) Inadequate provisions in schools in tearms of well educated perceptive teachers and prescribed curricula, space and material (iii) Largely uneducated parents. While the third would take a great deal of time to sort itself out and does not quite fall within the capacity of educational administrator alone to change, the first two are for the educationaists and the administrators to change. Delinking of degrees (certificates) from jobs have been talked about and even promised for long now but in the absence of supportive action in the vaccum that would be thus created, it has only remained a slogan. If one thinks deeply the scores earned in examinations are hardly indicative of how well a person would perform on a particular job unless the examinations are speciafically in the job related areas such as in case of professional course. It is vagucly guessed that higher general intelligence may be a common variable

for high achievements both in education and performance on jobs. The more dependent the scores on rote memory and mechanical reproduction of some information, lesser are the chances of this assumption being even partially true.

If the parents, children and teachers are freed from the tyranny of examinations which evaluates pupil performance in limited activities, it would be possible to pay more attention to the growth of the pupils in various spheres. Social and emotional growth would perhaps be given as much importance as intellectual growth. Provision of space and a variety of material in sufficient quantity would be necessary. The teacher would have to play not only his own role but also make up for the guidance that the parents may not provide.

TITLE OF PAPER: CHILD CENTRED EDUCATION- SOME PHILOSOPHICAL REFLECTIONS

C.Seshadri*

To begin with, a distinction should be drawn between 'child centred education' and 'child centred approach' to education. The National Policy on Education (NPE) has preferred the use of the latter phrase. 'Child centred education' can be taken to refer to an educational arrangement wherein every aspect of education including the concept and aims of education, its content and methodology, evaluation procedures and institutional arrangements focusses on the child and is centred around its needs, interests and abilities. This is a very strong claim indeed and is likely to be passed off as mere educational rhetoric or slogan. Historically, the concept in this strong sense had its origin in the Naturalistic educational philosophy of the French thinker Jean Jacques Rousseau whose basic tenet was that child's nature was essentially good and the function of education was to aid the self expression of the child in an atmosphere of untramelled freedom. This was in total opposition with the beliefs of the times which considered the child as basically

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evil inheriting original sin and education as a process of molding the child accordingly to a preconceived pattern, 'Child-centred education' was in fact a protest movement against treating the child as an adult-in-the-making rather than as a child and for the restoration of the freedom of the child.

No one, not even the most ardent champion of the child's rights, would make such a strong claim today. We are aware of the romantic basis of this movement and of its questionable philosophical assumptions. We are also in a better position to understand the nature of the child and of the educational process, thanks to the tremendous developments in the pedagogical sciences. What is demanded today is child-centred approach to education (or, to learning). This is a weaker but much more rational and realistic claim than the omnibus 'child-centred education' and can be taken to mean ways and means and methods which put the learner 'at the centre' (this metaphor will be explained as we go on) of the educational process and lead him to achieve the ends and goals of education as reflected in the curricular content and objectives. These goals and ends are themselves determined on the basis of considerations not limited to the child or learner alone.

What now are the conceptual ingredients of child-centred approach in the above sense? In the first place, this phrase appears in the NPE in the section on elementary education and in the specific context of universal enrollment, retention and qualitative improvement of education. There are several causes emanating from within the sphere of education (as distinguished from social, economic and other causes) accounting for non-enrollment, drop out, wastage and stagnation, lack of relevance of curriculum, failure to interest and involve the children in the learning process and so on - and child-centred approach is recommended as the antidote to fight these causes. What is mentioned under "child-centred approach" in the NPE makes it amply clear: motivation for the child to attend school and learn, remedial instruction for first generation learners, the policy of non-detention, adjustment of school timings and vacations to child's convenience etc.

Generally speaking one could identify three aspects to the child-centred approach - the child as a person or an individual, the child as a member of a social group and the child in the robes of a learner. These are not, however, independent and mutually exclusively roles. It is obvious that they cannot be so. The distinction is drawn only to indicate the comprehensiveness of the child centred approach.

That the child is to be treated as a child is an axiom of modern education. The ultimate goal of education is the total development of the child as a person and as an individual. Such a goal can be approached only through respecting the rights and freedoms of the child. Compulsory elementary education far from being violative of children's freedom is actually demanded by it. It is to help the child to exercise its rights and to enjoy its freedom that compulsory elementary education should be enforced. Respecting the child would also mean giving recognition to its unique individuality as manifested in its interests, abilities, aptitudes and making appropriate educational provision to develop them. It would also mean not treating the child as a means but as an end in itself. Allowing the child to live its childhood fully and not hastening or forcing its growth to adulthood by enforcing adult desires and standards in the name of pre-school education are also essential aspects of respecting the child. Naturally, under such a scheme of things, there will not be any corporal punishment.

There is a feeling that child-centredness implies an excessive and exclusive emphasis on the child as an individual. Such an interpretation would miss a major point of child development. The child apart from being treated in its own right as an individual should also be looked upon

as a member of a social group. The education of the child would be hopelessly incomplete if the child is not taught the art and skill of living in a group in harmony. After all, social development is an important component of personality development and a major aim of education. The child centred approach should be taken to mean leading and guiding the child, starting from accepting its needs and interests, to understand group norms and standards and to live in harmony with the others.

Child as a learner, perhaps, is the most important aspect of the child centred approach as this dimension lends itself to certain specific educational prescriptions. To put the child "at the centre" as far as approach to learning is concerned may mean several things. It may mean as the NPE has rightly noted motivating the child through "a warm, welcoming and encouraging approach, in which all concerned share a solicitude for the needs of the child", adoption of activity based learning for the child to learn at its own pace and when it is "ready", learning to follow the lines of cognitive development of the child as revealed by laws of child development and so on.

The essence of the child centred approach is that child needs are a basic factor in determining what the child should learn and how. This is an important principle,

but to properly appreciate its significance one should be aware of the distinction between 'needs' and 'wants'. Often times, the two are confused and child centred approach is interpreted to mean organizing education around the fleeting whims and fancies of children. The protagonists of the child centred approach, in the early days, were guilty of this confusion and of trivializing learning and education as the pursuit of pleasure and happiness. Needs and wants clearly cannot be equated. 'x needs y' does not logically entail 'x wants y'. A patient may need medicine but he may not want it. Every child, at least according to our perception of general education, needs to study mathematics, although many children may not want it. The point is that one should not simplistically assume that whatever children want are also their needs and that organizing learning around children s needs will automatically solve the problems of motivation. The same confusion surrounds the concept of 'interests'. The child centred approach to learning would therefore involve an objective, scientific determination and understanding of child needs and relating them to the learning processes.

Another concept that is usually associated with the learner centred approach is that of 'learning to learn'. 'Learning to learn' which means mastering the techniques of self instruction is held to be the master principle of the

new education where the teacher ceases to occupy his conventional role and functions as a facilitator of learning and an organizer of learning resources for children. The principle of learning to learn naturally takes different forms at different stages of education in accordance with the developmental characteristics of the learner at that stage. But, generally, the principle denotes:

- an emphasis on training and perfecting of tools of knowledge
- development of mind and its powers
- natural desire of the learner to know and understand
- observation, incuiry, discovery, instuiting, analytical reasoning, synthesizing, imagination, creativity
- acquisition of work habits, awakening of motivations and training in the use of learning resources of different kinds.
- providing for individual tailored work assignment
- co-operative, equal working relationship with teacher
- mastery of the sources of knowledge and methods of inquiry.
- acceptance of new sources of learning in media and community.

To sum up, education, in the right sense of the term, cannot but be child-centred as described above. That is, it has as its aim, the individual and social development of the child and its process is based on the laws of child development. The point of child "centredness" is that a deliberate emphasis is made and focus kept on the child, the learner in education. It is possible for education to be centred around the teacher, knowledge, books or examinations as in fact has happened in history. When one demands that education (or approach to it) be child centred one is actually making a value claim for the child in just the same was as such a claim can be made for teacher or for knowledge. The justification for this claim is partly logical and partly normative. It is logical ir that education is a process of developing the allround personality of the child and being so it has to accord the prime place to the child although this does not mean denial of the extrinsic ends of education. The normative justification is that we value the child and its rights as good over and above all the other paraphernalia of education.

NATIONAL SYMPOSIUM

TITLE OF THE PAPER : CHILD - CENTRED EDUCATION

Dr.M.P.Chhaya*

It is sometimes argued that the child-centred emphasis in education is atleast as old as Plato's prescription 'Let your children's education take the form of play.' But whilst most educational systems have recognised that some concession must be made to children's intellectual limitations, it is stated that the center of gravity in the old approach is outside the child, it is in the teacher, the textbook, anywhere and everywhere but not in the child. Now the change which is coming into education is the shifting of the center of gravity to the child. This emphasis upon the child has been a recurrent theme in educational literature over the past two centuries.

The child-centred movement in education can be viewed as an aspect of the wider movement to extend the notion of human rights to categories of human beings who had hitherto been denied respect as persons : factory hands, women, slaves and subject people. In one way or another, each of these groups was regarded as existing only instrumentally to serve

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the purposes of others. The movement for factory reform, abolition of slavery and emancipation of women derived their impetus from the moral imperative to afford human rights to these various underprivileged categories of persons. On similar grounds, child-centred educationists have stressed that children have a right to consideration and treatment as intrinsically valuable human beings.

The child-centred movement in education grew as a protest against the old rigidly systematised school which improved its procedure on all the pupils. It was founded on the assumption that the educational system exists first, last and always to serve the development of the child as an individual. However the pedagogical implications of this stress upon individual development are not always as clearly drawn as they might be.

Children of the same age are likely to have common characteristics and needs which differentiate them from other age groups and these age differences should be taken into account if schooling is to be effective. The eight-year-old, as an eight-year-old, may have many things in common with all children of these age which are peculiar to eight-year-olds and to no other age group. But to stress the individual child is to believe that each child is unique in the complex of ability, attitude, interest, experience and cultural capital which he brings into school. The teacher confronts every child as an individual having a unique personal history, by virtue of

which his perception of the environment will be idiosyncratic. The skills, knowledge and disciplines which the school exists to disseminate must be assimilated within mental structures each of which is unique. To that extent the meaning of any fact, concept or principle will be distinctive and personal.

It is a fundamental assumption of child-centred educationists that learning should have meaning for the child. Related terms like 'relevance', 'importance', 'significance' recur in the literature of this tradition and, especially, in the conversation of educationists. The point of educational activity is to enable the child to grasp the meaning of what he is attempting to learn. Unless the child understands what he learns, it remains a meaningless formula, a collection of inert ideas, a rote skill having no application outside the classroom situation in which it was learned. This is to say that education should be child-centred in that the learner comes to possess what he knows. His learning becomes a disposition to behave in a certain kind of way. In Polanyi's sense of the term, he has personal knowledge. And having learning as a personal possession entails that the learner must know how to do something with his knowledge, though its practical value need not be merely instrumental in the sense of having social or economic utility. The utilization of knowledge will often occur, in subsequent learning situations within the school itself, and the competencies acquired by

the child will often be the skilled use of concepts, facts and principles as well as the mastery of motor skills. Knowing how to use concepts and apply principles in activities which are primarily theoretical is of no less importance than acquiring skill in practical affairs. But whether our concern is with learning how to perform motor, diagnostic or theoretical skills, the tacit element at the heart of all skills requires that the learner should practise them for himself. He cannot enter into possession of a skill merely by being told what to do. For this reason, it is concluded that learning by doing is essential to the acquisition of knowledge as a personal possession.

The child must come to possess what he learns also in the sense that what he knows ought not to be particular to the situation in which it was learned but transferable to novel situations. Though an activity may be enjoyable in and for itself its educational justification depends upon its relevance for experience outside the context in which it was learned. So far as his education assists in the solution of life's problems as he sees them as a child, it is because these are identifiable as examples of problems (moral dilemmas, for example) which have more than a local significance in time and place. Education for life should offer competencies and disciplines whose power informs the whole of life.

Education for Life :

Hence a school leaver is educated for life, not merely so far as he carries away from school a description of current social problems and their proposed solutions, but rather to the extent that he is conversant with principles which will assist in an understanding of social and personal problems throughout life. Particularly in the twentieth century, the young are ill served by advocacy of educational activity which is instrumental towards solving present day problems; problems which may not exist (or which will manifest themselves in a radically different form) by the end of the century when today's school leavers will still only be in middle age. Our obsession with youth should not obscure the fact that it is the middle-aged who run our affairs, especially in politics. It is an illusion that we can somehow educate youth to avoid making the mistakes which we have made. A general understanding of the principles of ethics, which apply alike to the problems of drug addiction, drink, race, poverty and aggressive nationalism is preferable in education to a description of the solution which a particular generation finds for its own local problems. We prepare for life in both its contemporary and longer term perspectives by encouraging a disciplined consideration of moral principles, using whatever personal and social problems currently confront the young as concrete data to exemplify the perennial problems of personal discipline and social conscience which confront human beings, largely irrespective of time

and place. If education ought really to be directed towards assisting the learner to cope with the daily contingencies of life throughout his lifetime (including those problems he confronts as an adolescent school leaver), it ought to make him familiar with fundamental modes of thought in relation to wide areas of human experience. Indeed, insistence upon the study of disciplines is an important safeguard against the danger that learning becomes obsolete in periods of rapid change.

The problem is not therefore one of choosing between academic subjects of a life curriculum, so much as teaching the academic disciplines through concrete exemplar situations drawn from life, whether from contemporary life, life in the past, or life as it may be imagined in the future. The traditional curriculum (assumed to be concerned with a dead past) is sometimes contrasted with the life curriculum devised to help us in the present to shape our future. But to focus upon present dilemmas can be as much a threat to the future as concern for the past is often assumed to threaten the present. It is a valid criticism of some curricular projects which are conceivdd in terms of finding solutions to social problems, that they intimate little of what might constitute the good life if our social dilemmas were resolved. It is true that much educational theory is too Utopian to be a satisfactory working tool for practical educationists. But we cannot afford to be

so 'down to earth' that we never contemplate life's possibilities if only things were different. In fact, Utopia, like the Kingdom of God, is within men. Its values are essentially those we discover in our best selves and in the dignity, altruism, integrity and capacity for enjoyment of other people. Schooling which is relevant to life cannot avoid this concern with activities and modes of thought and experience which ought to characterize the good life in any community. This is why the normative concept of culture remains an important educational instrument, even when our concern is with the whole way of life of a community.

A third necessary condition for bringing the child into possession of his learning is that his schooling should be related to his own experience, to his weaknesses as well as his strengths. The teacher must account for the learner's experience in the sense of discovering his personal growth points and using the concrete daily life occurrences within the child's environment as exemplar situations out of which abstract concepts and principles are forged.

The Developmental Curriculum :

It begins at the wrong end from the assumption that the primary justification of social studies in the curriculum lies in preparing children for adult citizenship. We rarely ask the question whether these disciplines might be fruitful media for

helping children to make sense of their social relationships in the present. Thus, in the case of economics, it is assumed that the pedagogical problem confronting the teacher is that of discovering ways of reducing descriptions of things like National Income, Balance of Payments, Budgetary Policy, Prices and Incomes Policy to the language of children. As with other subjects, the necessary simplification of subject matter is thought to involve 'watering down' advanced academic material; reducing to simple descriptions material which is elaborately complex or highly abstract in character. The assumption is that academic disciplines can only exist and be explored at the level of Piagetian formal-operations. However, the problem of simplifying subject matter in order to make it meaningful for children is not essentially a problem of dilution. On the contrary , as we have just observed, fundamental concepts and principles of the academic disciplines are themselves essentially simple. Our approach to the education of the young child should begin by identifying the key concepts and principles in a subject and illustrating these through the simple, concrete uncomplicated experience of the learner. Arguably, as with the case of economics, the scholarly, abstract pursuit of a discipline is only the application of these key concepts to more complex and unfamiliar data.

This conclusion is in line with Bruner's assumption that 'any subject can be taught effectively in some intellectually honest form to any child at any stage of development', an

assumption based on his conviction that 'the basic ideas that lie at the heart of all science and mathematics and the basic themes that give form to life and literature are as simple as they are powerful', these key concepts and principles being intimated even in the behaviour of very young children. In relation to economics which we have used briefly to exemplify the discussion, academic economists have reached similar conclusions about the essential simplicity of fundamental economic concepts.

For Bruner the objective of bringing disciplines to bear on the education of the young is to be achieved by means of the 'spiral' curriculum. This is reminiscent of the long established concentric curriculum in which the learner returns continuously to familiar subject matter. But the notion of the spiral has the additional merit of suggesting repetition at ever higher levels of difficulty and complexity. The circle of fundamental concepts and principles is acquired on the ground floor of education. Development at different stages of schooling is then achieved, not by introducing the learner to distinctively new concepts and principles, but by applying these first principles to more difficult and complex material. On the spiral staircase within an open tower, returning again and again to the same point of view, but ever higher in the spiral with the wider perspective upon experience which this makes possible. Education is thus a matter of

beginning with simple key ideas and using these in analysis of materials of increasing difficulty, not of beginning with complex material and asking how it may be diluted to engage the understanding of the young. Therefore, the task facing teachers of the young is not the simplification of abstruse, scholarly subject matter, but rather a development of principled understandin of what is essentially simple and fundamental to human experience. Thus, in the social disciplines - economics, sociology and politics, for example - we are confronted with the task of identifying thse aspects of children's behaviour which require explanation in the language of economics or sociology or politics, and not with the problem of reducing explanations of complicated 'adult' institutions into the vocabulary of children.

If we have this sort of developmental concepts of human knowledge as a correlate of developmental learning theory we are in sight of resolving the present-future dichotomy in education. Introducing an academic discipline to a child involves both an attempt to explain his current behaviour and experience and the laying of a conceptual foundation for understanding of subsequent experience, either in the daily business of life or in the specialized activity of scholarship. The notion of schooling as the enforced learning of adult preoccupations and interests will persist so long as we refuse to entertain the possibility that the key principles of the academic disciplines find exemplification in the behaviour of

even the very young. We require a developmental view of subject matter which neither sacrifices the child's present interests, needs and concerns, nor constantly ascribes to him the role of alien in an adult community. There is no reason to suppose that all subjects of the curriculum might not benefit from a developmental treatment in which the discipline of the concrete-operational stage of learning lays a necessary foundation for formal - operational thoughts, as well as helping to bring form and coherence to the child's experience in the present.

Most of this could be agreed even by educationists who would never describe themselves as learner-centred. It would characterise efficient education in any school or college: an education where learners succeed in taking skill and knowledge into themselves so that what is learned may be employed successfully in the business of living and, to that end, where teachers take full account of personal and social impediments to learning and forgo educational instruments to overcome these. There is this obvious sense in which all education is learner-centred in being conceived so that the learner will learn. Pupils may fail to learn, but the intention is always that they should acquire skills, attitudes, dispositions, knowledge. Even a so-called society-centred approach to education has this ultimate concern with the learner. Thus, education which springs from social assumptions like the need

for economic efficiency, the importance of supplying industry with trained manpower, or the need to sustain the integrity of the State will ultimately require evaluation in terms of the skill and dedication with which the products of the educational system pursue these social values. So far as these ends are achieved, and so far as their realisation depends upon the educational system, this will be because learners have acquired the appropriate social and economic skills and can exercise them efficiently. Whatever the educational aim, its achievement depends upon how efficiently learners acquire and practice the relevant skills. If this is so, the teacher's attention can never ultimately be focussed anywhere than upon the learner.

The Teacher as Agent of Child-centred Education:

The child's education should point him towards the best available culture. Thus, in the child's own interests, we need the concept of the teacher as an authority. As authority, it is the teacher's responsibility to indicate the possible limitations of the learner's own spontaneous and untutored choice of activity, to mediate the vision of a wider, richer environment. He prompts the learner to ask himself if what he wants to learn is really worth learning in relation to the available alternatives : is his choice really in his best interests ? Left to pursue his own inclinations the child may choose subject matter which is of little cultural value, which may even reinforce his cultural

deprivation. Thus, even in a liberal climate where the child is permitted considerable free choice of activity, the teacher has an obligation to make quite explicit what the child's own choice implies in cultural terms. What are the limitations which it imposes upon future learning ? How many cultural or professional doors are closed by a particular curriculum choice and how much sweat and tears are implied in one which keeps them open ? As authority, the teachers competence also lies in his obligation to assess the disciplinary implications of a child's choice of educational activity : does it pose an unrealistic challenge in failing to stretch the child or in requiring from him disciplined activity of which he is probably incapable ? And once the child is embarked upon an activity, the teacher's disciplinary role is to encourage persistence when the romance of learning is overshadowed by the need for precision.

This cautionary, disciplinary, advisory, evaluative function will, indeed, involve the teacher in a thorough knowledge of the individual learner's capacities, interests and aspirations. But the place where he finds the child is also relative to where he might wish to go and this, in turn, has implications for the skills and concepts he needs to acquire in order to travel purposefully and with a sense of direction. To this end it is important that the teacher is familiar with the map of knowledge as well as with the intentions, the talents and the stamina of the traveller.

With these provisos, the term 'academic discipline' assumes its proper function of picking out those culturally valuable activities (practical as well as theoretical) whose nurture requires the professional expertise of teachers, as distinguished from those activities which are best learned from other educational agencies like the home, or are learned from life in the daily commerce of the market place. Although the word is used habitually in a derisory sense 'academic' ought to refer descriptively to that special kind of learning which prompts the community to devote some of its scarce resources to the provision of 'academies' or schools. The simple notion that the child, the teacher and the curriculum are educational co-efficients eludes us in our single-minded disposition towards monism.

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NATIONAL SYMPOSIUM

TITLE OF PAPER: PUPIL-CENTRED EDUCATION : A HOLISTIC APPROACH

R.G.Misra

Education being a deliberately planned process of bringing about desirable changes in the learner so as to lead him to self-actualisation within the parameters of social concerns, has, in the ultimate analysis, to be pupil-centred, particularly in a democratic society which swears by the greatest good for the greatest number.

The most crucial stage in the life of an individual's education is the fist ten to twelve years of age. The basic foundations of personality are laid at this stage. The most fundamental need of the pupil at this stage is a whoesome environment providing adequate facilities for his physical, social and psycnological development. The home, the school, the society at large and the State have to ensure that the child gets a healthy food, lives in a pollution-free environment, remains free from nutritional disorders and related diseases, gets adequate medical care, is exposed to worthwhile learning situations, receives love and care from

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parents, siblings and other elders in the family, school and outside in the society at large and gets ample scope to grow to his full physical and psychological potential. It is through a combined effort of the family, the school, the society and the State that a child can develop into a healthy vivacious, intellectually liberated and emotionally well-adjusted being capable of making the fullest use of the available learning situations for its all-round development. A programme of pupil-centred education cannot ignore this fundamental imperative. The New National Policy on Education (1986), has also highlighted this aspect in the following words :

"A warm, welcoming and encouraging approach, in which all concerned share a solicitude for the needs of the child, is the best motivation for the child to attend school and learn". (5, 6, p.11).

Every child is a unique individual. His reportory of behaviours is a complex organisation of external stimuli and internal conditions unique to itself. Even monozygotic twins get distinguished from each other as they grow into different individuals. Education centred round the needs and urges of an individual child has again to be unique in terms of quantum, pace and methodology. There are, no doubt,

many items of knowledge and skills which a child can learn in a group situation but how they are going to be organised in his apperceptive mass depends upon its own readiness pattern.

Limiting to the narrow area of academic courses, there are four components viz the learner, the teacher, the curriculum and the materials whose interaction produces the desired outcomes of education. The learner as also the teacher has a personality of his own. Both have their own strengths and weaknesses. The learner is a new entrant to the system. He comes to the school with his own habits of body and mind. He has his own sensitivities and character qualities, his repertory of language, his own command and appreciation of social and spatial relationships. He is an integrated individual with his own perceptions and reactive modes. The teacher's job is to penetrate the pupil's world and know where he stands in respect of his personal, social, intellectual and physical development. Even when his main concern is with the child's intellectual skills he cannot ignore the other aspects of the child's personality in so far as they impinge upon his academic achievements. This entry into the child's private world is possible only when the teacher is able to establish a positive rapport with the child. What the teacher is, is not so important as how he

is perceived by the child. The teacher's interaction with the child can be conducive to learning only when the latter perceives the former as a benign, friendly and kind adult with whom he may share his difficulties without any fear of a harsh reproach or physical punishment. Even occasional firmness on the part of the teacher so perceived regarding certain basic principles and modes of behaviour is received by the learner with respect and appreciation. The teacher's personality, then, plays a crucial role in smoothening the teaching - learning process.

Another important factor in the pupil-centred education is the recognition of the pupil as an individual at ease with himself and also with others around him. The teacher can make this recognition possible through acknowledging aspects of pupil's behaviour which make him unique and different from others. Nothing motivates a pupil more than the recognition of his talents by the teacher and a positive thrust to develop them.

A sound educational programme with the child at its centre has not only to cater to the latter's needs in the academic areas but also to those in the phycho-motor and affective domains. The concept of an all-round development implies a balanced growth of the child. In such a

programme each child must get the fullest opportunity to acquire knowledge and develop his intellectual abilities and skills, to inculcate desirable attitudes and values, to acquire proficiency in games and sports and also to realise the best in it for its personal and social development. Obviously under the existing conditions it is a tall order. However, a significant advance in this direction may be possible if the society is able to inculcate in the prospective teacher a sense of commitment to his job and an abiding love for the child. Appreciating the place of teacher in educational reconstruction the NEP has also observed:

" 9.1 The status of the teacher reflects the socio-cultural ethos of a society; it is said that no people can rise above the level of its teachers. The Government and the community should endeavour to create conditions which will help motivate and inspire teachers on constructive and creative lines. Teachers should have the freedom to innovate, to devise appropriate methods of communication and activities relevant to the needs and capabilities of and the concerns of the community". (p.25)

Ideally the school should develop a full record of the pupil's background, academic as also social, as and

when he enters the school. The school should know what kind of family support is available to the pupil, what his mental make-up is and how ready he is to acquire further in terms of academic as also non-academic content of his readiness to benefit from further education. It is only in terms of his psychological make-up and the levels of readiness that an educational programe tailored to his needs can be devised. Individualization of instruction, therefore, is the very essence of any programme of pupil-centred education. It subsumes a model in which the system is flexible enough to adjust to the individual's needs and potentials. Education in this sense is not a procrustean bed to which each individual child is to be fitted. The National Policy on Education (1986), has very well emphasized the need for the recognition of the individual as the focus of educational effort in the following words :

"1.9 In the Indian way of thinking, a human being is a positive asset and a precious national resource which needs to be cherished, nurtured and developed with tenderness and care, coupled with dynamism. Each individual's growth presents a different range of problems and requirements, at every stage-from the womb to tomb. The catalytic action of education in this complex and dynamic growth process needs to be planned meticulously and executed with great sensitivity" It further says

"2.2 Education has an acculturating role. It refines sensitivities and perceptions that contribute to national cohesion, a scientific temper and independence of mind and spirit - thus furthering the goals of socialism, secularism and democracy enshrined in our constitution".

The above two paras of the national policy have drawn attention to both individual and national goals of education. To be effective, education on the one hand, has to analyse the problems and needs of the individual and to endeavour to develop in the individual 'a scientific temper and independence of mind and spirit' and, on the other, it has also 'to contribute to national cohesion' and to 'furthering the goals of socialism, secularism and democracy enshrined in our constitution'. Without going into the controversies whether education is essentially conformist or creative, whether it is to subserve a socio-political system or to be the fountain-head of a revolution or whether it is to lead or to follow, it may be stated that inspite of the concern expressed about the individual growth and liberty the system as visualised in the NPE does not reflect this noble objective. What is envisaged as the national system of education has left little scope for any independent action on the part of the school or the teacher. It is only at the pre-primary stage that no rigid framework has been prescribed. There is no such

flexibility at the primary or subsequent stages. The NPE envisages 'a common core cocurriculur along with other components which are flexible' (3.4). 'Minimum levels of learning will be laid down for each stage of education' (3.7). External examinations will continue at the levels of classes X and XII. (Programme of Action, p.147, 2(a)). The rigidity of school time-table and assessment practices will continue as it is. The pupil shall have to adapt to a rigid time-frame rather than have the freedom to adjust the time-frame to his needs and potentialities.

Learning at lower stages of education is very much sequential. A child does not necessarily learn what the teacher teaches. He learns only what he is ready to learn, intellectually as well as emotionally. Moreover, recognising that individuals differ in their ability and achievement patterns, a pupil may have some special problems in one academic area and none in the other and, therefore, the pupil may need special help in one area and none in the other. It would be unfair to expect a pupil, who is weak in a subject on account of having not acquired even the basic minimum knowledge, to learn and retain subsequent material. Teachers who ignore this fundamental principle waste their time as also of the concerned pupils in rushing through a course of study which their pupils fail to learn. Therefore,

diagnosis and remediation are fundamental to pupil-centred evaluation. The teacher has to make a conscious effort to diagnose pupils' difficulties and pace the learning accordingly. Learning theorists like Skinner have emphasised 'shaping' as an essential step in learning. Information processing approach also highlights the importance of 'sequential processing' wherever a complex task is involved. The first task of the teacher in handling pupils needing remedial help is to analyse their difficulties by means of adiagnostic test based on sequential arrangement of items and then plan for their further instruction.

As the pupil advances, learning material becomes more and more complex with the result that insistence upon modelling education on behaviouristic lines may not take the planner very far. As pointed out by Lazerson "The basic difference between the classical behaviourist approach and the information-processing one is that behaviourists have not in the past considered that one could study -- or even make conjectures about - the human "program". "Because what occurred inside the person who received the stimulus (input) and made the response (output) was not observable, behaviourists considered that it could not be scientifically studied. Now that computer technology is so advanced and some of the complex programs are available for study, many psychologists who

formerly referred to themselves as behaviourists are turning to an information - processing approach and attempting to study the series of operations people perform that are analogous to computer programs"*.

While discussing his 'structure of intellect', Guilford also observed: "learning is discovery of information, not merely the formation of associations, particularly associations in the form of stimulus - response connection."0

Class-room learning is a much too complex phenomenon. Even computer technologists have not been able to simulate the human programme so far. Behaviour modification techniques based on Skinner's step-by-step 'shaping' for the realisation of simple objectives may prove useful when applied to simple behaviours. In complex learning situations, identifying specific targets and establishing sequential behaviour chains to achieve them is in itself a highly complicated task, particularly in class-room situations.

In the context of functional approach to learning theory, referring to Dewey's concept of progressive education, it has been observed.

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* Arlyne Lazerson: Psychology To-day, Random House, 1975, p.96

0 Guilford, J.P. in 'Learning Abilities' in Readings in Learning and Human Abilities, Harper, N.Y., 1964, p.62.

"Progressive education, at its best, was an embodiment of the ideal of growth toward independence and self-control through interaction with an environment suited to the child's development level. The emphasis was upon intelligent problem-solving (not upon learning through Play), in which each child solves his problems by selecting appropriate materials and methods and by learning to adapt these materials and methods to his ends. His interest sustains his effort as he experiments with his solutions by testing them in action. The kinds of problems solved are social as well as individual, for education is envisaged as a preparation for life in a democracy through democratic living here and now."*

It is easy to see how different this approach is from the S-R approach of the behaviourists. Here the emphasis is on the child's autonomy as against steering his learning through predetermined pathways as laid down by others. Ideally this is what pupil-centred education ought to be. Practically it may not be possible. At the same time, to exercise a total control over what a child is to learn, and how he has to learn it, may not be in consonance with the ideals of justice, liberty, equality and fraternity. The best alternative would be to adopt an eclectic approach and utilise the various theories and principles of learning to make the teaching - learning really effective for every individual pupil.

* Hilgard, E.R & Bower, G.H. Theories of Learning, Acc, N.Y., 1966, p.299

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No doubt, school is the place where formal learning takes place. The motivation to join and continue in the school comes from the home, the neighbourhood, the mass-media, the teacher, the peer group and the physical and psychological environment of the school. In a society where more than thirty percent of the population lives in subhuman conditions, where enough funds are not available to provide for the basic minimum facilities in the schools and to turn out adequately trained teachers in enough numbers to man the schools, and where education has, since independence, been a low-priority area, how much can be done to realise the noble objective of pupil-centred education is a moot question.

A system into which children are fed as raw materials and are expected to learn at the same pace under the rigid constraints of a school time-table and the syllabus, and to cross predetermined prescribed hurdles simultaneously and turn out at the end of a prescribed period of time as finished products to be dumped in the employment market is antagonistic to the very spirit of pupil-centred education. But unfortunately it is exactly what the present system amounts to.

Many expressions like 'syllabus-centred', 'examination-cented', 'objective-centred', 'activity-cented' are in use in the current educational jargon. Each indicates a

sort of centrality in instructional programmes to specific component of the educational process. If child-centred approach is designed to deemphasize this centrality in respect of the above and to draw the educator's attention to assigning some place in instructional programmes to childrens' to background and needs and to adjust group-oriented educational activities to individual child's requirements, as far as possible, within the limits and constraints of the system imposed upon the educator as also the learner, it may sound a feasible proposition.

In a programme of pupil-centred evaluation, learning materials suited to individual learners have a significant role to play. Individualisation of instruction can be partly successful if enough self-learning material is prepared and made available to the learners. Each learner can start at his own level and proceed further. Programmed learning materials, teaching machines, learner - oriented radio and television programmes, etc. can be extremely helpful. With technological advances it has become possible to reach the teachers and pupils located even in far-flung areas. Programmes can also be launched to narrow the chasm between the school the family and the society at large so as to motivate and encourage all concerned to participate effectively in the task of educating the child.

NATIONAL SYMPOSIUM

TITLE OF PAPER: ROLE OF A TEACHER IN CHILD CENTRED EDUCATION

M.D.Bengalee*

The education to-day has become a great challenge to both students and teachers. The entire concept has gone through revolutionary change. It is no more a class-room interaction between the teacher and the taught. It has much wider connotation: of help to an individual to be a perpetual learner, productive, sensitive, fully functioning and both mentally and physically healthy. The role of a teacher has become professional and highly intricate, rapidly changing with the demands of the challenging society.

1. Role of a Modern Teacher :

A teacher to-day is not expected merely to teach but to provide learning experiences so as to make the individual adjust to any new challenging concept that he may find at a later date. The only concept of merely helping the learner to be knowledgeable is not sufficient to-day. The learner has to be a continued learner throughout his life time, if he has to remain useful and productive

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at every stage of growth and development. Hence, the teacher has to provide tools of learning like skills of communication and competition and understanding of social, economic and technological environment around him.

Facts are not required to be communicated. Instead it is application of facts and creation of new ideas, and original thinking is what is required in the ever changing scientific and technological world of to-day. Every minute there is some innovation in science, some exciting experiments in a research laboratory or a new technological gadget introduced which needs to be understood and used by the student. A whole set of new attitudes and values need to be developed in the student so that they are ever prepared to face rapidly changing environment around them. In other words from a mere living the individual has to be vibrant, enthusiastic and dynamic in his approach. Again, with emphasis on technological advances, individuals seem to have become more materialistic and commercial. This has to be reverted in helping students to be more altruistic and willing to share their progress with the less fortunate ones. The realization must dawn on the young minds that self-development is possible only through social development. The teacher's role therefore has shifted from the concern

for students to the concern for community. This indicates that the responsibilities of a teacher have grown multi-fold and unless the teacher rises to the occasion not much of the difference will be noticed in the educational progress of the modern students.

2. Emerging Responsibilities of a Modern Teacher

As mentioned above, for most of education needs to be fulfilled, the teacher needs to interact not merely with a class of students but with the mass of population and serve not only the students but also the community at large. Stress has to be given to non-formal education rather than formal, so as to cater to a much larger group of individuals. The teacher cannot today rely on book instruction. He has to be well versed in computer based communication technology so as to prepare the students of tomorrow in the light of the changing needs of the society. No more are the teacher's needs remained as chalk and duster but practically every single teacher uses audo-visual material, overhead projectors, cassettes and videos to make the instruction both lively and interesting. The responsibility of the teacher is also to make the individual more responsive to the needs of the people around him and therefore, he has to instill confidence in his students to serve the people around him and develop

an integrated personality t be able to face the stress and strains of modern life. The emerging challenge is not merely to give food to intellect but to the heart as well, so as to make the individual ready to sensitize with the people around him. Educational programmes cannot be merely of developing knowledge and aquiring skills but more of creative nature so as to make the individual ready to try new sources and plan areas of emerging needs which are unknown and challenging. The responsibility has further increased because student today is not a passive learner but is alive and alert responding to television and tele-communication programmes which make him responsive to every challenge in the environment around him. If the teacher therefore is desirous of standing on the pedestal he needs to have a sterling character, maturity, sincerity, and transparency so as to make the students realise that "he is, what he truly is". This sincerity and openness alone will prove an asset in developing integrated personality in the student.

3. Professional Ethnics pertaining to Teaching Profession

Though teaching has become a profession it has diluted considerably from being a vocation. Unless the missionary and visionary zeal are brought back in the

profession of teacher, it may not help the true development in any one who wants realisation of child centred education. The professional ethics need to be, therefore, emphasized today in this vicious circle, where the child is surrounded by selfish motives and competitive exercises which make him fumble and fall.

A lot has been said about the ethical values of the profession and unless such values are developed, the trend will be towards commercialisation rather than professionalism. It is very much desired that teachers' training programmes are of a longer duration, where these ethical values and attitudes can be developed on a much sounder footing in the company of committed and dedicated teachers in training colleges.

TITLE OF PAPER: TOWARDS TEACHER PREPARATION FOR CHILD-CENTRED EDUCATION : THOUGHTS AND STRATEGIES

K.C.Panda*

Background

With advances in child development, the range of theoretical positions used to justify early childhood practices proliferated in the 1960s. Following the call for more powerful programmes in the area of preschool education to serve as compensation for children being reared in poverty and their chance to improve, a series of childhood teaching practices and models were developed. Many of these models justified their relevance in terms of developmental principles and learning theories.

The language of early childhood education and child centred education during this time was only indirectly related to the language of child development. It was based upon concepts such as individuality, freedom, child interest, need, play, activity, creativity, child centred, programme and growth. These progressive education concepts connect education with development and it is with these growth metaphors that

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educationists and developmental psychologists have found a common ground for child centred approaches in education. The diversities in these concepts can be confusing but these are not necessarily unrelated.

The sociological basis for child-centred approach to educational practice is based on ideas expressed in the book "All things Bright and Beautiful" by Ronald King (1978). King, a sociologist did an ethnographic study of early childhood classroom to understand the ways in which teachers typify their situations, and give meanings to them. King says, the reality of classroom teacher's world is constructed through the teacher's ideology a set of common definitions, a common language and a set of concepts. This was the role of professional teachers in the 1960s.

Things have begun to change over the years. The child of today derived his knowledge and skills from individual experiences that can be best described by the fable "The blind man and the elephant. Each individual experienced only a part of the whole ye each thought his part as the whole. Experience thus was the key to knowledge, and not the saying of others.

Approach in NPE

Very rightly and correctly the NPE, 1986 has recognised and advocated a child-centred and activity based process of learning. The centrality of learner in the educative process is recognised. Realising the enormous loss of human potential in the traditional teaching process prevalent in our school system which permits conformity instead of alternatives in thinking, the child-centred approach concentrates on the learners or the child and not the teacher in the educative process. It assumes, **rather** assigns the teacher to function as a facilitator and organiser of learning experiences. The role of the teacher therefore, has to promote independent thinking, stimulate curiosity, develop problem solving skills, plan and help for self learning by creating favourable environment and situations instead of being a transmitor of dead and dried facts. Besides this change in orientation, the child-centred approach emphasises needs, interest, and attitude specific curriculum, development of skills, attitudes and values which are necessary for adaptation to the environment. In short, the child-centred approach tries to focus on the process of learning, the process of learning to learn for an allround development of children.

Child-centred Education and Teacher Competence

The child-centred approach therefore looks at (a)

curriculum renewal based children's needs, interests and attitudes (b) change in professional teacher preparation with a newer emphasis. (c) Using activity as the basis for learning especially at the primary and upper primary level and also at secondary level.

Planning for teacher preparation would depend upon basically on understanding of the needs of children and the level in which children are being educated. These would determine what kind of competencies should be developed among teachers who would be involved in the process of instruction; whether in formal setting or in a non-formal setting.

It has already been stated in the inservice teacher training package (NCERT) that the primary school children learn through imitation, physical activity and observing basic concepts which are seen in their immediate environment. They have certain developmental needs : need for first hand knowledge, need to explore, need for security and self-confidence, need for self-identity and several other basic needs relating to their life and relationship with others.

While these may be the basic need structure among children of the primary and upper primary level, the need of the secondary school pupils are strikingly different. They need to be aware of their own poentialities and must

be able to relate these to their future life. Therefore, the pupil at this stage need more of assistance in decision making rather than directions. They look for assistance for development of verbal and conceptual skills not by direct instruction but by self-learning. This type of learning can only develop if teacher preparation is consistent with the needs and expectations of the learner and if teachers minimise their role in directive learning.

Keeping these basic ideas in mind one would ask questions as to who should be a professionally competent teacher and what kind of preparation and strategies are necessary to develop the teacher potentials of this type.

Role of Teachers

The role of teacher has been very clearly defined in behavioural terms in the inservice teacher education package (NCERT). For example : setting up a positive socio-emotional climate in the classroom :

- Motivating children and accepting them;
- Developing trust in children's capacity to learn;
- Behaving as a resource for creating meaningful learning experience;
- Accepting the individual and the group;
- Participating as a member of the group and guiding learning;

- Becoming sensitive to the childs need and interacting in a way that would provide a sense of feeling and security; and

- Recognising and reinforcing the individual contribution.

When these expectations are demanded of teacher, education today is still burdened with a heavy load of routines accumulated over many centuries of teaching namely teaching towards knowledge and facts. What is needed at the moment is much more than that. Rapid changes in our society require acquisition of a variety of cognitive functions which are deemed necessary for an effective adjustment. Education therefore should address itself to develop this confidence among children by deliberate planned activities. The teacher therefore has to be made conscious of the imensions of cognitive functions and the way it can be translated into activities to be practiced by children. Without adequate cognitive functioning, the individual is domed to continuous and self perpetuating failures during the school years and in life. It is therefore necessary for the teacher to acquire competency to:

- develop self image,

- structure experience for cognitive development,

- provide reinforcement for scholastic and non-scholastic development.

in short, he should try to bridge the gap between cognitive and affective aspects of personality of the children by the Identification process (Spodek, 1970). In what way a teacher can function as a model requires orientation during his pre-service training as well as though in-service training.

On the basis of these background information certain basic assumptions emerge as useful in planning for teacher preparation and designing a teacher training curriculum. Rand (1980) has summarised some of the basic assumptions which should be exposed to the teachers during the training.

(1) Cognitive functioning is one of the most important factors in the individual adaptation to himself and to the environment which develops in children through experience.

(2) The human system is an open system and is subject to modification by environmental intervention and as such creation of a conducive environment is necessary.

(3) Interventions in one area may result in meaningful modification in other psychological adjacent areas, i.e., the child develops as a whole organism.

(4) Educational intervention in the cognitive area should be geared mainly towards the development of individual's capacity to learn and to become a source for information via his own autonomous activities. This can be done by providing mediated learning experiences (Feuerstein, Rand, Hoffman, and Miller (1980).

(5) Instruction and intervention have to be based upon a great variety of sources including informal but meaningful social settings.

(6) Intervention should be geared towards creating optimal conditions for better education from the start of life.

On the basis of these statements it can be stated that if one wants to properly educate a child he will have to start with his grand father. Although it is difficult, yet teachers have to be made conscious about shaping their interaction with the children in a manner which is less imposing in character and the idea which Froebel floated in Germany in the 19th Century. It is therefore, necessary that some radical reorientation in the professional preparation of teachers would be necessary to promote child-centred approaches for educational practice. It is

a recognised fact that teacher behaviour is the most potent, single, controlable factor that can alter learning opportunity in the classroom. It is imperative therefore to look at the teacher training curriculum as it exists today and the changes that can be brought about in it.

The teacher education programme can be looked from two basic angles :

(a) Pre-service/In-service Teacher Education

(b) Levels of Teacher Education

Pre-service Teacher Education

The NCTE (1978) framework has very exhaustively and intensively discussed the rationale and structure of pre-service teacher education programmes at different level. However, some changes in its rationale and structure emerge as necessary in view of the changed emphasis on child centred education and the role of teachers.

The Pre-primary (Pre-school) Teacher Education Curriculum

The structure of a teacher education curriculum for the pre-primary level with a child-centred focus should include a core-curriculum consisting of the following.

(a) Process of involving children in play activities

(b) Emphasizing learning as a highly individual process for the young child with the pace, direction and nature related to the child's developmental stage and interest.

(c) Process of participation in group settings and group activities for both cognitive learning and social development.

(d) Helping the child to function as a whole the approach which can be utilised by the teacher.

(e) Creation of opportunities structured or otherwise but personalised interaction.

(f) Process of permiting, stimulating and supportive child activity.

(g) Providing skilled adult interaction with parent, teacher, siblings.

(h) Planning for intervention in terms of quality and relevance.

(i) To foster child development and introducing intervention on a continuous basis to help children to grow.

(j) Understanding needs related to child's physical development, intellectual development, social and emotional development, intrinsic and extrinsic motivation system and knowledge of the competencies what the child should develop in relation to health and nutrition, physical development, intellectual development, language development, cognitive development, emotional development.

(k) Understanding strength and weaknesses in children drawn from this advantage in environment.

(l) Culture learning and socialisation.

The existing teacher training curriculum needs (NCTE framework) should focus teacher competencies in these areas either by restructuring the child develpment curriculum or introducing a core-curriculum under the pedagogical theory courses. As regards the methodology and practices of teaching,

emphasis should be given more on development of curiosity, enquiry training, activity method, play and direct observations. The pedagogical theory courses relating to teacher and education in the emerging Indian society should emphasise the child as an active agent of learning and the role of family, parents, teachers and society in general as stimulating and facilitating resources. During the pre-service programme the teacher through practical activity should ensure full participation and involvement of children in the process of learning. With regard to general teacher behaviour the teacher training curriculum should reflect contents which would promote child-centred approach and minimise the role of teacher as the solo director of the learning situation.

STRUCTURE OF PRE-SCHOOL TEACHER EDUCATION

Four Semester Professional Education after Class -X

Area			Course
A. Pedagogical Theory	30%		1. Teacher and Education in the Emerging Indian Society
			2. Child development
		*	3. Principles and practices of child-centred education.
		*	4. Evaluation in pre-school
B. Working with the community	10%		5. Work situation related to 1, 7, & 9.
C. Methodology and practice teaching including related practical work.	60%		6. Core Training Programme Package (10%)
			7. Special Training Programme Package-I: Child Care (10%)
			8. Special Training Programme Package -II: Activity Method (10%)
			9. Special Training Programme Package -III: Art, Music & Work experience (10%)
		*	10. Play activities in children(20%).

*Note: NCTE framework with suggested change.

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Primary and Upper Primary Level

The structure of primary teacher programme should also reflect similar changes both in the pedagogical theory courses as well as in redesigning the practical components and teaching of subjects. Some suggestions regarding curriculum content seem relevant. These are :

(a) Establishing and maintaining a safe and healthy learning environment.

(b) Advances in physical and intellectual competence of children.

(c) Building positive self-concept and individual growth.

(d) Promoting positive functioning of children and adults in a group.

(e) Bringing optimal coordination of home and school child rearing practices and expectation.

(f) Developing responsibility among children

(g) Promoting self-learning habits.

As regards the process of teaching the primary teacher should be exposed to the process of teaching as nurturance; teaching for self-learning; teaching as relating to activities; teaching to help decision making process and teaching as a process for analysing one's own behaviour in a clinical setting.

The primary teacher in addition should be acquainted with the Froebelian system, the Montessorie practices, the

child care approaches in order to develop allround competence among the children of greater importance would be the importance of transacting the primary school curriculum keeping the child in the focus, promoting language education and development by corrective feed-back, summary feed-back, elaboration and extension, extending knowledge and reinforcing. He should also be acquainted with the dramatic play, discussion session, puppetry, story telling for improving communication skills. Child-centred educational competence can also be developed among the teachers by enabling them to use the process approach in what ever they teach.

One of the essential components for ensuring child-centred education would be developing competence in the teacher about the process of ongoing evaluation.

STRUCTURE OF PRIMARY TEACHER EDUCATION
FOUR SEMESTER COURSE (AFTER 10+2)

	Area		Courses
A.	Pedagogical Theory	30%	1. Teacher Education in the Emerging Indian Society.
			2. Child Psychology
			* 3. Principles and practices of child-centred education.
			* 4. Evaluation in primary school.
B.	Working with the community	10%	5. Work situations related to 9, 10, 11 and 12.

Area		Courses
C. Content-cum-methodology and practice teaching including related practical work.	60%	6. Core Training Programme Package (10%) 7. Special Training Programme Package-I : (Language 10%) 8 Special Training Programme Package-II : (Mathematics 10%) 9. Special Training Programmes Package-III: (Environmental studies-I 5%) 10. Special Training Programme Package-IV : (Environmental studies-II 5%) 11. Special Training Programme Package-V . (Art and Work experience 10%) 12. Special Training Programme Package-VI : (Health & Physical Education and Recreational Activities 5%) * 13. Activity method (10%)

*Note - NCTE framework with suggested change.

Secondary Training Curriculum

The objectives of secondary teacher training curriculum has been spelt out in the NCTE curriculum document 4.5 and 4.6. Although the basic structure of curriculum framework need not undergo drastic changes yet the content of the curriculum should undergo radical changes, in adding core

programmes on adolescent development, teaching-learning process in relation to child-centred approaches. The curriculum Teacher and Emerging Indian Society should reflect the child-centred concerns and the National concerns stated in the policy documents. The methods of teaching, different curricular subjects should be redesigned to include the participatory approach, project approach, direct observation and experimentation rather than the lecture, demonstration, discussion which are more teacher dominant.

It is not possible within the limits of this paper to go into which specific contents should be or should not be included in such a curriculum but the objective of discussing the structure and content of the teacher training curriculum is to emphasise a change in thinking in the process of teaching:

Teaching as a process of behaviour analysis
Teaching as a process of social interaction
Teaching as a process of information processing
Teaching as a process of diagnostic and prognostic behaviour in a clinical setting.

The educational principles which are in vogue are very much in dispute. It is therefore, considered necessary to examine the relevance of the traditional approaches in relation to the child-centred practices. The practical training during the pre-service period has to be supervised either in a real

... in a simulated situation to ... development of child-centred approaches in education

STRUCTURE OF SECOND... (TWO SEMESTER COURSE ...)

Area	Weightage	Suggested Courses
A. Pedagogical Theory	30%	1. Teacher Education in the Emerging Indian Society.
		2. ... Development.
	*	3. Teaching-learning process : Principles and practices in child-centred education.
	*	4. Evaluation in Secondary Schools
B. Working with the community	10%	5. ... related to ... 10
C. Content-cum-methodology and practice teaching including related practical work	60%	6. ... Training Programme ... (...%)
		... Training Programme ... (Life Science/Physical Science/Social Science/...s Mathematics 20%).
		... Training Programme ... Work Experiences ...
		... Training Programme ... (Health, Physical Education and Recreation ... 10%)
		10 ... Lesson Planning, ... learning activities

* Note - NCTE framework 1978 with suggested change.

Inservice Training

Since the existing teachers who are working in the school have not been exposed to this kind of innovative approach, there is a need for reorientation of these teachers through in-service training at least of a week's duration. The other strategies which can be used for reorientation of teachers in the process of child centred approach would include the printed matters, extension programmes, mass media, face to face discussion, multimedia approach to bring change in their thinking in relation to the teaching learning activities and design of instruction.

Printed matter forms the most obvious pattern of communication media. In all countries there are general and specialised educational journals, news letters, bulletins, research reports, which can serve as the basis of information inputs for reorientation in the thinking of teachers as regards child-centred educational practices.

The in-service programme includes lectures and related type of face to face instruction and discussion. Greater use is now being made of seminars, working paper, discussions, and other group activities that require a higher level of individual participation. A beginning must be made therefore with the use of case study and simulation materials. A high

degree of personal involvement is necessary to bring the theory and principles of child-centred education in the discussion of actual teaching and administrative incidents.

Multimedia approaches to in-service teacher education can be encouraged using T.V. broadcast facilities within school system. The role of professional and specialist associations is also of significance for disseminating a wide range of new educational practices and ideas relating to child-centred approach to education, curriculum renewal and evaluation. In certain advanced countries like U.S.A., Australia, U.K., Germany, European countries credit bearing courses are now available for teachers through broadcast, T.V., Radio, and other channels of communication.

The use of wider range of media has diversified the institutional setting in which in-service teacher education is provided, Universities, Colleges, and Teacher's Centre are now among the places where the teachers can pursue educational programmes to improve their qualification and outlook, With large number of teachers in a school, school based in-service education programme can also be practiced. In fact, a new idea or principle may find more ready acceptance within a group of like minded people through discussions, school meetings and inducting younger members of the profession with

this new idea. School based in-service education therefore has an additional merit of bridging the gap between the ideas and practice. With the growth of child-centred education, the teachers role as an organiser and manager of learning resources would be promoted rather than becoming a solo performer on the classroom stage.

Conclusion

The training of teachers in child-centred education is by far the most crucial input because of the traditionalism, conservatism and functional fixity with which teachers in our society have been working from ancient times. It is therefore, desirable that the child-centred approach to education should form a core programme in both pre-service and in-service teacher education. At the same time it must also be logically linked to other developmental programmes.

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NATIONAL SYMPOSIUM

TITLE OF PAPER: CHILD CENTRED APPROACH AND EDUCATIONAL TELEVISION

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Introduction:

Before we discuss the place of Child Centred Approach in Educational Television, it may be relevant to define the concept of the approach in term of the usual mode of education and to list out the basic characteristics of the same to be taken for educational televison. It is also better to admit that although the merits of child centred approach is known for about three centuries now, as although everybody seems to vouch for it, its practitioners are but few and far between, both in the conventional education as well as educational media. Thus there is no possibility of projecting a particular model of a child centred educational television drawn for anywhere in the world. We can at best speculate on the nature of ETV if and when it takes this approach seriously. With that in mind, let us make a quick attempt at finding some of the existing definitions and some important milestones of the development of the child centred approach. Also it is important to point out that for

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express their natural impulses and thus opposed the stern discipline and forced learning that characterised the schools of his day (Brameld, 1971). The concepts of freedom, liberty, rights, equality of opportunity had brought in not only political and ideological revolutions, but had their profound influence in the theory and practice of education. Advocacy of the supremacy of the child in education has been traced out to the time of Cominious. Gradually the issue became focal, not only for the progressivists and liberalists but for studies of developmental psychology, and of individual differences in mental abilities and performance. Pestalozzi, the eighteenth century swiss school master demonstrated application of Rousseau's notion of freedom in the actual operation of a school. He asked his teachers to cherish individual liberty as the supreme value, to let the child learn things for himself, to make his own mistakes and to take active part in his own discipline. Even a century before Rousseau, Comenius had criticised conservative schools saying that the subject matters was being forced on the child. He forbade his teachers to use force or roughness. The school environ should be made so pleasant that pupils should prefer to attend school than stay at home. The school should be as pleasant as a fair. Pestalozzi propounded the concept of 'self-activity' and Herbert anticipated the concept of the 'whole child' by

insisting upon a harmonious and justly proportional development of all the capacities of the learner. The propounder of Kindergarden, Froebel insisted upon the right of the child to be free in expressing his nature. He had thus conceived the role of the teacher as a guide and not a commander. He was one of the first to regard play and games as rich learning experiences. Dewey in his 'Pedagogic Creed' had interpreted educational process as having two sides - one psychological and one sociological neither of which could be subordinated to the other or neglected without evil results following. Of these the psychological side was the basis. The child's own instincts and powers furnish the material and give a starting point to all education. The significance of social conditions is in interpreting the child's powers and to translate them in to their social equivalence. Rousseau recognised that children were not simply small adults and that their mental capacities, attitudes feelings and ways of looking at things were not simply relativel underdeveloped, but they were in many ways quite distinct from those of adults. This has been confirmed by the findings of psychologists of the current century including Piaget, Bruner and Erickson. All the suppositions and findings in this regard are hard to report in one place, but a few generalisations are loud and clear. Firstly, since children are not innately bad, one can trust that their natural choices

would be good. They should be given all possible freedom. Secondly, the harsh disciplines of he conservative schools will not be necessary if the curriculum employes more natural methods, under no condition should the subject matter be forced on the child nor his behaviour patterns are to be changed by adults by corporal punishments and other means of torture. It must be recognised that every child is an individual having his own peculiarities in the ways in which he learns, governed by his innate abilities and experiences. It is important to understand the child is placed in a situation which allows free play of his instincts and emotions with spontaeneous expressions. With these generalisations the child centered approach can be differentiated from other approaches. Barrow & Woods (1982) tried to do that. The term 'child centred' must be taken to imply that the child himself should be given consideration as a person on his own right. If one treats the child simply as a means to an end, or as a pawn to be be manipulated to somebody else's advantage, then by no stretch of imagination could one claim that the child himself was at the centre of one's educational scheme. Any education claiming to be child centered must be concerned for the advantage of the child himself. It must regard the child as an end in himself. The child, moreover, should be accepted as a child. A child's psycho-physical level, his capabilities and incapabilities must be taken into account. The individual differences are to

be accepted honestly. The needs and interests of the children should be the guiding principles for education. The child's viewpoint should take precedence over the teachers and the child himself should dictate the scope and direction of his education rather than to be educated in the light of preconcieved values and attitudes of adults.

Uniqueness of children

The child study movement has pointed out that each child is unique and this uniqueness is to in preserved. Also each age group has certain characteristics which ought to be observed and recognised. The curriculum for children therefore should be built on the basis of the interests of the children as ultimate symptoms of their potentialities. There are some things which attract children easily. Some activities are more interesting to them than to adults. Among others nature study, appreciation of the beautiful things, weaving, sewing, gardening, clay modelling, dramatic activities, constructing things, singing, listening to stories and handling objects like what Froebel called 'gifts' such as spheres, cubes & cylinders have been found to be attractive to young children.

Needs of Children

Needs are also as important as interests. In stressing the important and vital needs for educational opportunities for young children, the American Association of School Administration had stated that a well planned programme should satisfy such basic needs of children as follows: (1) children need to grow up; they need to become independent of adult help, gradually but steadily, to learn to share possessions, to control anger, to accept responsibility as leader and follower; (2) children need to develop their inner self; they should have ample opportunity to express their thoughts and feelings, to exercise their creative powers, to preserve their curiosity and spirit of wonder through varied experiences with art, music, literature, nature studies and games. (3) children need affection; they must be loved, appreciated and wanted by those closest and most important to them; an atmosphere of happiness warmth and security is vital for their growth; (4) children need to learn to live with people other than their own family members; they should be able to live, work and play acceptably with other children of their own age group; they should develop a sense of belonging which affords them ample security with older and younger children and with adults and eventually with all kinds of people in all walks of life; (5) children need adult guidance, the sympathetic and understanding guidance of

happy, well adjusted adults help children to develop confidence, insight, skills and attitudes they need; (6) children need reed[illegible], and they should be able to give a natural and free expression of their energies in such an environment which is clean and safe; (7) children need a rich, challenging environment, offering them both indoor and outdoor space, with many materials at hand for their reach offering opportunities to do things, to construct, explore and experiment in their own child like ways with satisfying result; (8) children need a balanced day and life with an optimal mix of work rest and play. Their learning experience should be like a balanced diet.

While considering the capacities of children adequate weightage should be given to the level of their mental performance e.g. reasoning, problem solving and creativity. Estimates of intelligence attitudes etc. drawn from their test performance might prove inadquate for designing their curriculum. Since the curriculum must be organised in accordance with the needs and interests of the children which have very wide variations, the curriculum is to be extensive and comprehensive. The psycho-social and ego needs are more important than the physiological needs at this stage. The need for love and affection, security, self fulfilment, contentment, approval, curiosity etc. are to be provided

for. Emotional stability is one of the greatest need of the child. With the sole objective of unfolding a child's personality, nothing can be beyond the scope of a child centred curriculum unless there are activities or lessons against the children's needs and interests. The guiding principle for a child centred curriculum should be that everything in it should not only be useful but should be perceived as such by the child. Social activities, entertainment and participation are just as respectable as the academic subjects. All efforts should cencentrate on providing the child an apportunity to learn from first hand experiences. Through such experiences and experimentations, the child discovers thing for himself. Methods of instruction should be adopted to arouse curiosity of the child.

Educational Television for Children

Educational Television has acquired great popularity in many countries in the world. It would not be proper to assume that all Educational Television programmes are basically child centred in approach, but there are a few strengths in this media which are particularly relevant for such an approach. There is no real evidence that all the television sets and viewing hours make a difference in how muc children learn, but certainly much informal learning does take place (Lessor, 1974). The child tends to associate

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television with pleasure and recreation. He initiates his own viewing. No coercoin is necessary to get him to watch. It is impersonal and nonpunitive. It is also a source of "modelling" which occurs simply by watching others without any direct reinforcement for learning and without overt practice. The child initates the model without being induced or compelled to do so. Television can show a variety of people and behaviours and has a remarkable ability for transport children to events places and experiences that they have never seen before and are unlikely ever to have an opportunity to see in person. It can also become a source of sharing of experiences among children of different subculture and background.

There are however problems of producing educational television and programmes for children that are not so easy to tackle. Not only does it demand costly investments in terms of equipment and manpower, it has to depend upon a smooth and accessible delivery system. At the production end, it needs a research base. Lot of indepth analyses, sensitive design and development before children gain from such programmes. It requires a band of well trained and committed workers who would observe, monitor, evaluate and plan such production. This exercise requires much more than required by production per. se. However, the child is a better audience

than the adult in that he is more receptive. With imagination, educational television can be made to serve and interpart educational function in helping children and develop basic skills like literacy and numeracy and to stimulate ever intellectual development by extormy than to a wide range of new situation, events and ideas. It can also foster desirable values and habits among children. As far as children programmes are concerned,there would be no resistence to be overcome.

A child centred educational television is possible if its curricular and methods are organised at least as systematically as in the conventional system of education. The danger of projecting stereotypes regarding people and events are to be avoided, and efforts concentrated on sustaining the child's interest. All activities dear to the children are to be utilized for the programmes duly directed to specific objectives. The outcomes will have to be objectively evaluated for each sector separately. A child is intolerant of boredum, repeatitions messages of adults trying to speak in their language. 'Acting' and over dramatisation may be counter productive for him. A lot more will have to be known about the child's preference than is at present assumed. In fact e-- the coventional education tends to underestimate the child in many ways. It has also to be noted that a

child learns not only from the content of a programme but also through the way it is presented or the 'format' of the same. Also it is important to note and if possible plan for activities that should be done by adults before and after the educational television programme is seen by the children. Educational Television Programmes are not going to be isolated experiences in a child's life. What they learn for it may be a small part of their total learning experiences. Again children need caring teachers and parents and not just television, 'a big cold box'. In that sense, a child centred approach to Educational television may demand a long term association with the children, observing their reaction to ordinary things what they expect what they see, what they understand and what is beyond them. It would be necessary also to study their peculiar'myths' in modern times and to use television to build in new ones with a positive value orientation. The images are to be 'beautiful' in the child's sense of the word and not what the art critics calls beautiful. The aesthetic perception of the child is not always understood correctly. This exercise needs "knowledge experts" and "media experts" pooling their talents to create educational programmes that are worthwhile for the children. It has been eminently clear now that educational television has to be basically a teamwork. Teachers, parents and children will have to participate in making the programmes.

What we have seen in the earlier sections of this paper are all relevant for educational television. The observation and statements of all the philosophers and theoriticians can easily to transferred to the context of educational television. It can be made democratic, free, enjoyable like a fair and made under the direction of children. Their needs can be symbolically satisfied by television. It can in turn, inspire and excite the child if we know how to organise his experiences and perceptions meaningfully through the stages of his development.

Other countries like the UK, USA, Japan, Australia, Germany, Poland, etc. have gained significant experience in educational television. There may be a lot to learn from them. Experience from other Asian countries may be more relevant. Whatever possible, the approach, content, format, characters and images should be analysed in the context of child centred approach. There may be commonalities and differences which would be revealing for creating programmes for our children. At present the Central Institute of Educational Technology of the NCERT alongwith the State Institute of Educational Technology established in six states of the country participates in the 'INSAT for Education' project, through which 3 hours 45 minutes of ETV programmes are being broadcast everyday for children of 5-11 years age group for 5 days a week and

for their teachers on Saturdays. The programmes are now broadcast in Hindi and 4 other languages. The number of States using such broadcasts in now 11. There may be more state institutes shortly. Thus the facilities for implementing a child centred approach is not entirely lacking. After an initial period of rush and hurry, it can be hoped that the attention of the programme makers, script writers, producer and research workers would be drawn towards creating more child centred programmes as a result of innovating and experimenting. In this process, perhaps only a few programmes can adopt the child centred approach first, gradually building up the stock, trying them out, refining them and taking them back to the field till everyone is satisfied. This process would increase the understanding of the nature of programmes with the child centred approach. For other programmes, it is likely that the errors would be considerably less. This way, gradually a 'model' with or without a theoretical base would be available for others to either emulate or eliminate. There seems to be no other way of evolving an ideal child centred approach.

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NATIONAL SYMPOSIUM

TITLE OF PAPER: COMMUNICATION BETWEEN TEACHERS, PARENTS AND THE COMMUNITY: STRATEGIES, MATERIALS AND THE MEDIA

Asha Bhatnagar*

The role of parents in the lives of the children and rearing them up can not be overemphasised. Research has shown that the home has an enormous impact on the developing child and the school has the second most important influence on him, and that a partnership between home and school is supportive of the developing child right from the preschool stage through the Senior Secondary stage. There is enough evidence to encourage educators to include parents as partners in the educational process. It is essential for providing need-based education to the child, to know about the whole child - the child in his totality. Psychological research has revealed that there are many facets of the child's behaviour and personality. It is quite possible that the school's perception of the child is entirely different from the way home views him, for the school is able to view only a limited aspects of his personality. Similarly the perception of the home may be restricted to some facets of the child's personality which are not revealed in the school. Moreover, some aspects of behaviour may be of greater concern to

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parents than to the school. Life at school is thus not and perhaps ideally should not be coextensive with the child's life in his totality. Under such conditions when it is clear and accepted that the child in school is not the "whole child" it is obvious that without the help of the parents education at school will not be for the "whole child". The child-centred education presumes that the school knows the 'whole child' and plans education for all the aspects of his personality or in other words is 'educating the child in totality'. It is therefore essential that the schools are made more responsive to the families (Saxe, 1975). This can only be realized when school is in constant touch with the home in order:

(i) to know the aspects of the child not known to it, and

(ii) to seek parents' cooperation in this great venture so that the education provided is complete and child-centred in the true sense.

This home school partnership is also desirable to help the teacher understand the home completely and develop insight into the problems which a child encounters in school for some of them no doubt originate within the school, but most of these which are manifested in the school life have their roots in the family life. The teachers' job is committed to identify the needs and problems of all students but more

particulary of students belonging to special groups and categories. Understanding of the child's home can help the teacher in identifying those needs and problems of the child which can be satisfied and solved only through working with the parents. The school may not be able to change the home conditions in a majority of cases but we are convinced that if the teacher approaches the parents with a sincere interest in the child and an open mind towards his problems, the parents would certainly do such things for their child as providing a better diet, securing medical aid, giving him more affection and attention, spending more time with the child, giving him more freedom or less freedom, treating all the children in the family fairly and the like, to fulfil the child's needs, solve his problems and to improve relationship with him.

The connection between school and home is thus essential for the following reasons :

1. Most parents are genuinely interested in the maximum development of their children and in furthering their learning. They are however unable to monitor their children's development themselves due to various types of limitations and impediments.

2. Over the years a change in the current style and image of the professionalism of the teacher has taken place. He wants to be better equipped to help the child in his total development. He is also conscious that his perspective of the situation and the perception of the child and his needs and problems are likely to change after knowing and understanding his parents and home.

3. Parental involvement facilitates long lasting effect of any intervention programme introduced by the schools. The effect of this programme is washed off easily if it is done by the teacher alone. The most effective and everlasting ones are those in which teachers seek collaboration and involvement of parents also.

Bronfenbrenner (1976) also emphasizes:

> "The involvement of the child's family as an active participant is critical to the success of any intervention programme. Without such family involvement any effect of intervention at least in the cognitive sphere, appears to erode fairly rapidly once the programme ends". (P.252)

Emphasising the importance of home involvement, White (1984) has also pointed out on the basis of review of research that 'the informal education that families

provide for their children makes more of an impact on their total educational development than the formal education system'.

Parent involvement in the education of children is not a new concept. Its history goes back many centuries. But it has been due to modern research and theories of Dewey, Piaget, Bloom, Erikson and many other philosophers, educationists and psychologists which emphasized the importance of early childhood experiences and education for the child's allround development that the interest in involving parents as partners in the education of their children has been rekindled.

Communication between Parents and Teachers

For effective home-school relationship, opportunity for open communication is of paramount importance. Communication can be established either through media or personal contact. Only one way communication can take place through media whereas personal contact facilitates two way exchange. Though the efficiency of a two-way communication can not be over-emphasized the use of one way communication is also required and quite meaningful at times.

The one way communication informs parents about the school's plans and happenings which can range from the simplest note sent by the teacher to the complicated news-

item in the media. Some other tools of one way communication are news letters, school magazine, children's diaries, circulars, handbooks, brochures, pamphlets, some printed and mimeographed material for distribution and the media such as T.V.; radio and the newspaper. The use of media of course will be more economical to address and educate the entire community rather than a small and specific group of parents.

The two-way communication is possible through personal contact. Parent-teacher conferences, P.T.A. meetings, telephone calls, school fairs, home-visits, picnics, parents' participation in school projects and workshops, panel discussions, etc are some of the means to establish two-way communication.

Strategies for Working with Parents

The logical outcome of effective communication with parents is their understanding and appreciation of the school activities and their willing cooperation and active involvement in the school programmes. In fact the lack of sympathy and cooperation with the school often lies at the root of children's poor school adjustment and performance. A good working relationship with parents benefits the school, the teacher, the child and the parents themselves. Strategies therefore can be thought out to orient the parents to the

school and involve them in its programmes. This can be realized through well planned strategies in four phases:

Phase I : Laying the foundation for positive teacher-parent relations

(i) Teachers' introductory note to the parents

(ii) Teacher-parent get acquainted with activities.

(iii) Teacher-parent regular contact.

(iv) Notes regarding the students' work sent to the parents

(v) Written feedback from parents.

Phase II : Expanded teacher-parent contacts

(i) Visit to school

(ii) Parent-teacher-student conference

(iii) Home visits

(iv) Class social get-together

(v) Case conferences

(vi) Recognition days

Phase III: Parents' orientation to the school

(i) Principal's welcome note

(ii) Sending school information booklet

(iii) 'Knowing your faculty' booklet

(iv) School newsletter

(v) Principal's open forum

(vi) Welcoming new parents in the school

(vii) Attendance at community meetings

(viii) Community nights

(ix) Career conference/exhibition

Phase IV: Parent assistance and involvement in school

(i) Parent home tutoring

(ii) Parents assisting in the classroom

(iii) Parents assisting with trips

(iv) Parents initiated socials

(v) Parents as resource persons

Working with Community

Besides parents there are other resources in the community which can contribute a lot to the overall process of education. Unfortunately till now community and the school had no links as far as the partnership in education is concerned. Consequently the community as a resource for human development has been the single most under-utilised if not completely unutilized resource in our country. This has been partly due to the apathy of the community agencies for the process of education in general and for the school activities in particular; and partly due to lack of consciousness on the part of school about various community

resources and its hesitation to tap them for the benefit of children. This attitude has resulted in an overall segregation of the school and the community. It has however been realised now that the two can not exist in isolation and the school can draw a lot from the community. Community resources can contribute a lot to improve the achievements and functioning of the schools, These resources can be broadly classified into three types :

a) Information resources :

Agencies which can be utilized for getting educational and occupational information, and which may prove useful in the educational and vocational planning of students. Some such agencies are YMCA, YWCA, ICMR, IARI, Banking Recruitment Centres, Staff Selection Boards, Public Service Commissions, Employment Exchanges, Bar Association, Medical Association etc.

b) Referral resources:

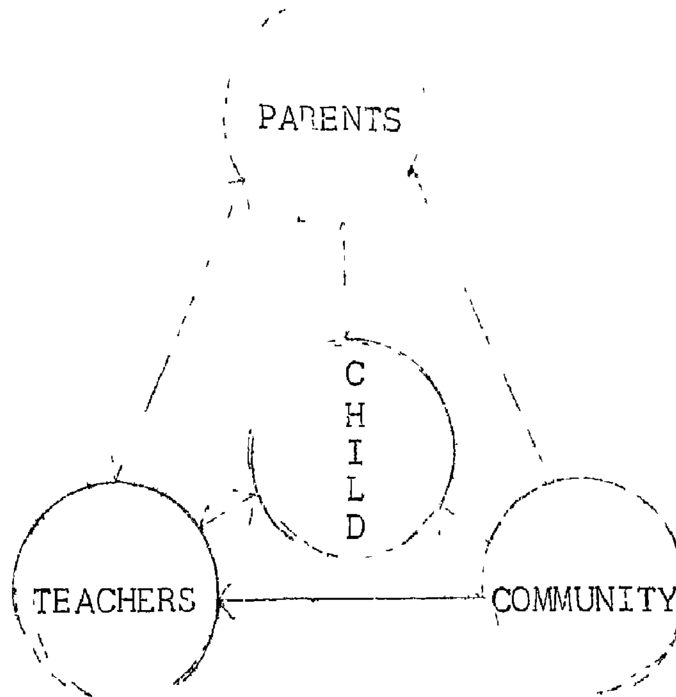
These are the agencies where the school can refer cases for specialized help. Hospitals, clinics, child guidance centres, medical services, mental health services, social welfare agencies, vocational guidance units of SCERT etc,

c) Energy resources :

These agencies provide financial assistance to the students for studies and/or help in their placement. Some of these agencies provide scholarships, stipends and grants to poor and deserving students. These are Rotary Club, Lion's Club, Charitable Trusts, Bharat Sevak Samaj and the like.

Besides utilizing these resources the school can establish linkages with certain local industries. The educational potential of the school can significantly enlarge by its linkage with the local industries, as implemented in the socialist system of education and upbringing. All members of socialist society have a growing involvement in the upbringing of the future generations. The organic link between the school, the family, and the broader community as is found in the U.S.S.R. GDR. Cuba, Bulgaria and Hungary etc, provides a firm guarantee of the ongoing enhancement of efficacy and quality in the difficult task of rearing of the rising generations. The communication which should ideally exist between teacher, parent and the community agencies has been depicted in the diagram given below:-

A schematic presentation of the desirable communication between teacher, parents and community in the context of the child-centred education



Resources and Materials

Achieving the objective of strengthening the relationship with home and community will be facilitated through establishing a resource centre or library of relevant materials in the school for those parents and others who are unable to get them elsewhere. The resource centre should have compiled references that discuss various issues of child developments, child rearing practices,

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child health care, communication with children-teachers and other parents, discipline, behaviour management, understanding the child's needs and problems etc,. The resource material can be books on pertinent issues, published material, pamphlets, booklets, magazines, journals, charts, posters, bulletins, and media materials such as films, slides, filmstrips, video cassettees, audio cassettes etc., that cover a variety of aspects of working with parents and community.

The resource centre should also include published literature, information bulletins, charts, posters, and graphs etc, on educational-vocational, and social-personal guidance as well as published literature on remedial guidance on other school subjects.

Some games, toys, playmaterials and lending library for toys, books and games can also form part of this resource centre.

The school can strengthen its relations with the community also if besides the parents the material of the resource centre is made available to the non-parent members of the community who want to make use of it.

The Media

Schools have only tried to establish contact with the parents and community through the traditional methods of

establishing communication namely through face to face direct contact or through print media. Time is ripe for establishing the electronic link between [illegible] ince - the penetration of radio and T.V. etc. into virtually every home strengthens the parents' educative potential.

Although the mass media such as T.V.; radio, video films, newspapers, magazines etc. are being used very extensively to orient and educate the teachers, parents and the community at large in the country, there is a tremendous scope to utilize these media in establishing contact between these three important agencies of the society. At the national level NCERT is working in this direction and is already trying to work in collaboration with the Doordarshan and Akashvani to broadcast the educational programmes at the national network. Not only the electronic link but other media such as the print and the overhead projector can also be exploited extensively for the purpose. It would however be more viable and effective if more attention is paid by the concerned authorities and agencies at all levels to develop the requisite software to achieve the goal. Need to develop and use the multi-media is felt at the national, state, district and school levels to educate the parents and community at large, so as to enable them share the partnership with the school in the most noble task of nurturing the future generations.

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TITLE OF PAPER: WORK EXPERIENCE AND CHILD CENTRED EDUCATION

Arun K.Mishra*

Work Experience has been an integral element in the Indian educational philosophy. This was so even during the ancient times when scholarly pursuits always went alongwith experiences of working in the 'Gurukuls' and learning the basic skills of life. Of late Tagore and Gandhi placed high premium on work centred and life centred education in their educational thoughts, and practices. However the work oriented learning, so deeply anchored in the educational system given to us by the colonial masters has brought about serious aberrations in theory and practices of education which still hamper the assimilation of work into educational process even in spite of unequivocal acceptance of the theoretical premise. The plethora of recommendations of several national commissions since independence have not succeeded in materially altering the educational process on the ground in a vast majority of our schools. The dichotomy between learning and working has assumed a proportion where work in education is often seen as an alien concept in the society and the present social values gravitate against those components in the school curriculum which do not augment the students' score in

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public examinations at secondary and higher secondary stages. The present paper aims more towards establishing the pedagogical significance of work experience rather than the organizational problems or the socio-economic objectives behind introduction of a meaningful programme of work experience in the school curriculum.

The Child-Centred Curriculum of E

By very design the work experience curriculum is child centred. The subject is never to be taught through textbooks and the theoretical considerations concerning the 'doing' exercises are only secondary to "learning by doing". The fingers more than eyes or ears are the sensory organs directly communicating with the brain and stimulating the psychomotor development along with the intellectual capabilities.

In this process the child first of all is directed to identify a problem relating to either a production or service oriented process in the community and then proceed to gather information and acquire skills in the selected process. The children may work singly or in groups and the mode of instruction does not allow for sermonising by the teacher where the student may be a passive listner. His methodology involves information gathering, observation, group discussions, familiarizing with tools and materials and actual mastery of the

manual skills. In all these processes he is mentally involved which sharpens his int 'l ctual abilities. He is confronted with problems whil on work which he works to solve under the guidance of the teacher. He thus acquires the skills of problem solving in greater measures than what can be achieved by work oriented teaching. In the entire process of lear ing through experience of work the child can not afford to remain a passive participant in the teaching-learning process.

There are many concomitant gains in this process of learning which are often mentioned under the objectives of work experience and rightly so. Through his participation in manual work he develops a sense for dignity of labour and sympathy [illegible] l bourers in our society. He begins to respect work as an essential value of life. He works in close association with his peer group and in this process develops the spirit of working together and sharing of responsibilities. The spirit of team work is the key to success of people working in any walk of life in our contemporary society and work experience provides opportunity for developing such a spirit. Other attributes, discipline, proper work habits, punctuality, entrepreneurship and self confidence.

Another very important aspect of participation in work experience relates to proper development of eye-hand co-ordination and neuro-muscular coordination at an early stage in life.

It is a sad commentary on part of our society and educational system that work experience occupies a back seat in comparison with the so called scholastic areas of study. It is an irony that the proper development of the total personality and character of a person is given consideration secondary to the mental abilities as reflected in numerical scores based often on rote learning. The lack of such creative experiences in early formative years provide fertile ground for the development of destructive temperament amongst the youth. If a child is groomed as a creator of objects, commodities and services he would probably never develop as a destroyer later on in his life and the world would be a much nicer place to live.

WE as Means to Achieve total Child Centred Education

This brings us naturally to the question of what must be done in order to make work experience a reality in all schools of the country. No doubt, there are several schools in the country which have organized work experience as a meaningful programme. The basic question would be how to develop a demand for work experience amongst the parents and

community so that the misplaced values on bookish learning is transformed into more application oriented learning of each subject. One can think of a massive awareness drive coupled with preparations at the school level to execute the activities under work experience. Better still it would be more rewarding to make curricula of the scholastic areas more application oriented than at present. For example one can visualize language/arithmetic teaching by older children to adult groups or younger out-of-school children as a synthetic course to be evaluated for both the components together. Similarly the principles of sciences can be taught through the experience of th their appliction in the community. There may be many more examples. But it suffices to say that such an orientation would make the teaching faculty also application oriented which in turn not only lead to better implementation of work experience but also make all other subjects also child centred in truly pedagogical sense. It will further add to the prestige of work experience and provide an honourable place for it in the scheme of evaluation and public examination. When the goal of total orientation of the entire school curriculum to make it work experience based is achieved there may n be any need for retaining a separate subject of "work experience" in the school time table.

TITLE OF THE PAPER : EDUCATION FOR LIFE

Tara Ali Baig*

Nothing is wrong with Indian education if one judges the performance of some 16,000 Indian students doing brilliantly in colleges in the United States, who have, moreover, even made public records of excellence emblazoned in the press. Why then the current thrust to revolutionise education, if that is what is intended ?

If in the years since Independence, education has not been child-centred, one might ask, on what was it centred ? Satisfying parents may be one answer or perhaps satisfying teachers or policy makers with a vision of an utopian India. But it is children who have to be educ ted, and the child's potential realised. In 1986 a new policy of Education was drafted. There was the old one of 1968 in which the very first clause stated that the objective of education is "to promote national progress, a sense of common citizenship and culture and strengthen national integration". Now there is a stress on equality. Equality as we well know, is simply absent in the value systems of a caste-structured society like ours. But instead of being reduced after Independence it has been

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further entrenched and fortified, regardless of India's Constitution, by the pervasive glamour of democratic politics. How is a new Education Policy going to change that ?

If my views are both radical and unorthodox, I believe we must look at trends emerging in the life of a nation which is filled with vitality even if it appears to be chaotic and unstructured. We must, therefore, analyse if possible what can be done in pragmatic terms and what are the ingredients of the Indian child-personality that can be shaped in new ways.

The struggle for freedom made political action more important than all other national values. This we must accept as a fact. Since Independence nothing has changed. Politics began to mean power and status. It suited the Indian need for security and upward mobility. Development for nation-building programmes did not have similar stature in the public mind, and as political life promised rewards and excitement, religious and caste differences to capture votes became essential to serve political ambition.

The common man, struggling to survive, has been caught in a cross-fire. The norms of old systems that have provided security of a sort had given way to new power elements. There were political promises of a better life, State and Central schemes for betterment. Yet poverty remained as oppressive

as before, rural change depended on too many contradictory forces. Money had become the only recognisable value. Goodwill, cooperation and decency were no longer common coin. For now the self-reliance of our old village systems, whatever their hierarchical structure, had been dramatically altered by political patronage, the grant system and the vote.

One of the greatest losses to the country has been the lowered status of the village teacher. In ancient times the teacher was a revered figure in a community, and learning was respected. In 1958 when Durgabai Deshmukh travelled the length and breadth of the country to set up women-oriented social development projects, she was struck by the remarkable calibre of village teachers, especially their dedication and commitment. Today a similar journey might reveal teachers who spend more time out of the classroom than in it, while urban and peri-urban teachers often moonlight for private tuition fees, though they continue to receive much higher salaries than three decades ago, inspite of their somewhat cynical disregard for their important work. Had we made teachers more important than Ministers or MLAs, things might have been different.

While it is easy enough to spell out the steps needed to make education either child-centred or a means of promoting the urgent disciplines needed to create high calibre manpower resources in the country, the major hurdle we face is the teacher.

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Child-oriented education means one in which the teacher doesn't "teach" so much as stimulate the child's mind by new methods of teaching. However, there are two blocks to this in both parents and teachers. The average parent looks upon education as preparation for a job. Hence, the demand that numbers and reading be imparted even to children in nursery schools and balwadis. The pressure on the child at home is to work hard and pass examinations. As for the teacher, it is easier to do something by rote than to innovate stimulating learning processes. The "madrassa" style intoning of meaningless sentences also has the sanction of our age-old habit of sitting at the feet of the guru. Gurudom at least had respect of the child and the community. Does the teacher have that respect today and, if not, has this contributed to the trend of looking for money and security instead ?

The Chinese were able, during the Mao years, to introduce drastic changes in their educational system, Some were disastrous, but at least they were able to use the civic disciplines enforced by the Cultural Revolution to create equality and a sense of citizenship in their schools. This was done by dramatic public recognition of the child's place in society through the little Red Guards, and teaching children to care and have concern for each other. This was achieved by introducing specific programmes in schools where children got high marks and praise if they looked after the handicapped or showed

concern for each other (a strong student helping a weak one, making a new student welcome, rushing to be the first for a service etc.), and for practical activities such as collecting herbal plants for acupuncture and village health kits or taking on chores in the community for community improvement.

None of this is part of our educational system. Yet most children respond more energetically to action programmes than to learning ones. We talk incessantly about the work ethic, but it does not exist in our cultural system. Hence physical work is relegated to lower castes, women and children in the labour force, creating an automatic denigration of physical work. This may well explain why compulsory primary education has not been achieved since Independence, why poverty continues where it always existed and drop-outs make a mockery of the huge financial investment made by the State in education.

If the Bible said, "the poor will always be with us", we must admit that the poor are essential for the comfort and convenience of the upper classes. We should further recognise that India, more than any other country in the world, devised the caste system to give religious sanction to inequality. Our Founding Fathers, the greatest of whom was Gandhiji, knew that we had to work very hard to create a society of equal opportunity, and that education was the key.

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The process of education since Independence, however, has not been as negative as it has often been made out to be since millions of children have gone through schools and done well. Millions more have graduated from centres of higher or technical education. This means that education has created a growing Middle Class, plus the growing ambition of those still at the bottom of the social pyramid, contributing a new force in the country. It is hard to say whether we can properly assess this force as yet, since there are no parameters beyond examinations for gauging the nature of either progress or change. Yet this change is abundantly evident in strong group movements and protest action in Harijan, village and tribal areas, in the media and isolated programmes of village level activists, community workers and women's and children's development centres all over the country. Pfofound change has indeed taken place and education has been the catalyst.

Whatever planning we may do in this regard must now be strictly pragmatic. We cannot forget that education, if it has contributed a child's school span to 10 if not plus 2 at least, means that they have, in fact, entered the white collar ranks. Education, to parents of boys in particular, means becoming superior: it means being entitled to a higher job, higher emoluments, superior caste position. This is deep in the subconscious, for education does mean getting out of the labour ranks.

If we succeed in our ideal of creating a society of equality through education, teacher training etc. and reach all classes from rural areas, backward areas and slums, we shall face the phenomenon of huge numbers of job seekers, but no one willing to do the dirty work of garbage clearance, coolie work, road and other sanitation processes necessary in every community. Will we be in a financial position therefore in the future to have machines that will take the place of men for this work, as in the Western world ? Or will we lapse into the horrible situation we have seen at close quarters in Delhi and other cities in 1988 of epidemics and sub-human living conditions in our shanty towns where civic services, lack of manpower and people who will not lift a finger to improve their own environment ?

Gandhiji was a true visionary. He foresaw all this when he concentrated his social energies on Harijan uplift, sanitation habits and self-sufficiency that meant doing dirty work with one's own hands. Therefore education today must have three essential components introduced into the system with a ruthless thoroughness if we are to have a nation of worth-while, productive citizens, and not a chaotic, unliveable state.

The first is discipline. The second is concern for others, the third cultivating the habit of working with one's hands.

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These three elements will function if they are HABITS. They will not happen unless from early childhood it does not become an integral part of personality.

Disciplines have to include such civic habits as using toilets properly where they exist, of not fouling tanks, rivers and community water sources, of covering excreta with earth in rural areas to reduce fly infestation or spitting anywhere one chooses, and other health dangers to children. These disciplines must also include teaching systems of disposing of rubbish. Every school child must instinctively never throw rubbish for someone else to pick up. This is a residue of the sweeper system. It is not a factor of public life in most other countries. In schools use of waste paper can be taught along with leaf mould pits to make leaves, vegetable or bio-degradable matter useful. Children can also be introduced to alternative technology where it is applicable like weaving, basket-making, papier mache, chalk, candles and mud architecture imparted in sessions where children can be doing something positive along with normal school subjects.

When I was a child, we made a mud hut in the garden, collecting gauba from the fields and furnishing off floor and walls as people do in a village. It was a source of great pride to us that is stood for four years and we were admired for our work.

Every school in the districts could have a small lab for water testing as a service to the community. Children can be involved in such work along with brick lining drains in a village and improved sanitation around tanks and wells. Such action programmes involving schools could also make a school a community center after hours, with well thought out programmes and a TV set for which the children could be responsible. It could supply a much-needed social centre in our caste layered, exclusive villages. The TV set and the phenomenon of the Ramayana shows that this media can bridge differences and bring people together. We cannot create unity by quoting Gandhiji or the Gurus. Preaching must not be a part of education to impart moral values. Far better to innovate programmes in which children will gain these values by doing things together that achieves recognition in their own environments.

By setting too high a standard of academic achievement in our educational policies, we not only make teachers despair of being able to cope with change, but we put too heavy a burden on the child who has to reconcile moral values of the home with moral values proclaimed in the school.

Let us start by assessing the home environment of the average child. In the disparate layers of family life in towns and cities, the focus is generally on status of the male, duties of the female, sacrifice as a noble objective, religious

observation as duty, as well as a desirable norm. Yet at the same time, in families there are many elements of insecurity over jobs, neighbours, personal relationships, which makes for over-dependence on conservative values which in turn increases fears and distrust. Parents tend to concentrate on the drive to make money in whatever way possible, while they push children to working harder at studies. All this to lift the burden of dowries for girls and lack of jobs for boys as soon as humanly possible.

What then is the role model for the average child brought up for the most part with patterned ambivalence ? With indulgence in the early years, especially of the male child, habits of cleanliness, good manners and care of others is neglected. Casual attention to these basic foundations of later civic concern and responsibility, by perhaps a multiplicity of elders in a joint family, is replaced on adolescence of the child with sudden authoritarian rule of the father figure who, in early childhood, tends to be a remote figure. The child sees the mother, aunts and grandmother's role of caring for the male members of the family. For a boy this is one role model. The man must be looked after properly. Religious duties in a conservative family demonstrate the need to invoke the blessings of divinity by certain actions and values imparted by its womenfolk. This becomes a desirable pattern, even if it is not a spiritual dimension in the child's

life. Duty, it is clear is to family exclusively, since a great deal of talk within a home relates to plans, schemes, political advantages available in a locality, business deals, plus family quarrels. In addition there is evidence of hypocritical standards or unethical actions of elders. In the family the child finds no well-defined personality model. The boy child probably then absorbs a certain status factor from the head of the family, but in all too many cases enjoys no personal concern of the father figure beyond the disciplines of harder study. However, ambivalence comes from departures from moral codes imparted by religion for truth and purity when in the home situation ethics are frequently abandoned for personal gain.

The child then tends to take role models from outside the home and from the rowdy street boy to the gun-toting hero on TV or films. If you watch a group of boys laughing and shouting in a band on their own, there is invariably one child, the show-off extrovert who leads the pack. The studious, quiet children in the group will go along with it, even if that is not a role model for them, but all too often it is for a great many others, through college, with the lure of student politics, this becomes the hero role model, not Gandhi or Nehru.

Confusing for the Indian child is all this psychological plurality. It is this factor we have to look at seriously if education is to achieve even some of the ideals planners have set before us.

It is for this reason, the education programme that combines useful physical work and objectives with academic ones, could give children a much needed value alteration package which would change their attitude and behaviour without being too perceptible. At the same time, ingraining habits not supplied by the average family by the collective team spirit generated in the school system that receives public and local recognition, could be a change agent. For habits make a nation, not dependence on past glories which, in any case, the young today have generally forgotton.

NATIONAL SYMPOSIUM

TITLE OF PAPER: GIFTED CHILD - NATION'S ASSET

K.S.SARMA*

It goes without saying that nations resources of intellectual talents are among the most precious which we will ever have. The origin of genius, the natural laws of its development and the environmental influences by which it may be affected for good or ill are scientific problems of almost unequal importance for human welfare. Equality in education does not mean an identical education for all rather it means an educational programme that recognises and provides adequately for the vast factual differences among students. The National Policy on Education 1986 states that, "It is universally accepted that children with special talent or aptitude should be provided opportunities to proceed at a faster pace, by making good quality education available to them, irrespective of their capacity to pay for it".

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Therefore, arrangement for such students cannot be fitted into regular course of study. "Special arrangements for such students will have to provide teaching/learning on modular basis for very small group of students in a small number of subjects of interest to them. Such arrangements will be characterised by large facilities, higher teachers-students ratio, and regular participation by professionals in teaching programmes". The noted historian Arnold Toynbee remarked that "To give a fair chance to potential creativity is a matter of life and death for society. This is important because the outstanding creative ability of a fairly small percentage of population is mankind's ultimate capital asset. In spite of the fact that it is increasingly realised that gifted children are more versatile and complex having unique psychological maturity level in different dimensions, they remain the most neglected group and no attempt has ever been made in India to catch them young. Torrance has remarked, "There are gifted children who are high achievers at the time they enter kindergarten but whose excitement is so dulled by the experience that they are under achievers by the time they enter first grade...... They seem to become slower and slower and are eventually classified as slow learners or retarded". The routine school work is too easy for gifted children, they do not stretch their

imagination to maximum and they do not find the school sufficiently challenging. Rather they consider it as a wastage of time. This often results in severe problems of adjustments. Such children become anti-social or behavioural deviants and pose greater challenge to the teachers. Because, ultimately the teachers with their tender care and psychological upbringing can understand the psychological need and emotions of gifted children, they can re-educate the parents to cooperate with them in finding out the ways and means through which better educational opportunities can be provided to the gifted children.

Keeping in view these considerations, specific objectives of the programme of education for gifted children are as under:-

1. To develop the growth of the gifted child towards realisation of his own intellectual, emotional, motivational, physical potentials.
2. To determine the need and extent to which special education programmes are required for the gifted.
3. Acceleration of Human Resources through the enrichment programmes for the Gifted Children.

For conceptualization of any programme for gifted children, major thrust should be on the following issues:-

1. Who are gifted
2. How to identify gifted
3. Infrastructural strategies
   (a) Programme Design
   (b) Curriculum Development
   (c) Specialis - teacher preparation
   (d) Evaluation

1. Who are gifted children

Gifted children are those who achieve a level of excellence. A conservative definition may limit the performance only to academic pursuits, while liberal definition may include excellence in various dimensions, such as music, art, drama, leadership, creative writings, public speaking, social service, etc. At the conservative end of continum is Terman's definition, "The top one per cent in general intellectual ability as measured by the Stanford Binet Intelligence scale or a comparable instrument." At the other end of the continuum may be found more liberal definition such as of Paulwitty, "There are children whose outstanding potential in art, in writing or in social leadership can be recognised largely by their performance. Hence we have recommended that the definition of giftedness be expanded and that we consider any child gifted whose

performance in a potentially valuable kind of human activity is consistently remarkable". Thus gifted children are those who by virtue of outstanding abilities are capable of high performance. These children require educational programmes and/or services beyond those normally provided by the regular school programme in order to realise their (potential) contribution to self and society. Children capable of high performance include those who have demonstrated any of the following abilities or aptitudes singly or in combination:-

1. Specific academic aptitude
2. Creative or productive thinking
3. Specific academic aptitude
4. Leadership ability
5. Visual and performing art aptitude
6. Psycho-motor ability.

Giftedness emerges from an inter-active process which involves innate capabilities of individual and stimulating environment in which he grows. Gifted children, if nurtured carefully, will benefit not only themselves, but also their community, nation and the world.

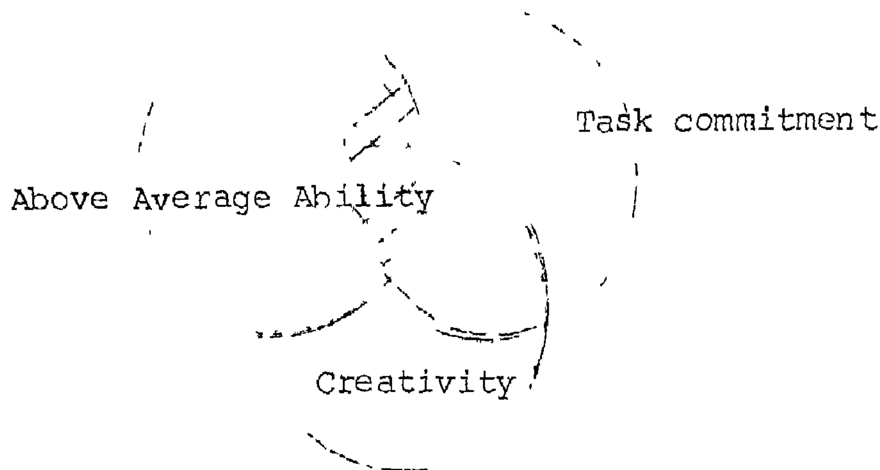
2. How to identify gifted:

Research on creativity and productivity have consistently shown that although no single criterion should be used to identify giftedness, persons who are recognised because of their unique accomplishment and creative contribution possess a relativity well defined set of three inter-locking clusters of traits. These clusters consist of above average general ability, task commitment and creativity. It is important to point out that no single cluster makes giftedness. One of the major errors that continues to be made in identification procedures is over-emphasis of superior abilities at the expense of other traits. Although the influence of intelligence, as traditionally measured quite obviously varies with areas of achievement, many researchers have found that creative accomplishment is not necessarily a function of measured intelligence. Reviewing several research studies, dealing relationship with academic aptitude and the professional achievement, Wallach has concluded that "There is little relationship between test scores and school grades on the one hand and real world accomplishment on the other." Even Holland and Astin found that "getting good grades in college has little connection with more remote and more socially relevant kinds of achievement; indeed, in some cases, the higher the student's grades, the less likely it is that he is

a person with creative potential. So it is desirable to extend our criterion of talented p· formance". Another study concluded that more creative/productive persons come from the 95 percentile than above it and if such cut off scores are needed to determine entrance into special programme, we may be guilty of actually discriminating against persons who have the creative potential for high level of accomplishment.

Besides above average ability, a second cluster of traits that are consistently found in creative/productive persons constitute a refined or focused form of motivation known as task commitment. Although Terman never suggested that task commitment should replace intelligence in our conception of giftedness, he did state that intellect and achievements are far from perfectly correlated. Although task commitment is the trait which is not as easily and objectively identifiable as other general cognitive abilities, it is nevertheless a major component of giftedness and, therefore, be reflected in our definition. The third cluster of traits that characterizes gifted persons consists of factors which are put together under the heading of creativity. Creativity has several dimensions such as originality of thinking and freshness of approach, ability to set aside established conventions and procedures and constructive ingenuinity etc.

The most accepted module of giftedness is described as below:



According to the above graphic presentation, giftedness consists of interaction among three task clusters of human traits. These clusters being above average general abilities, high level of task commitment and high level of creativity. Thus gifted children are those who possess and or capable of developing this composite set of traits and applying them to any valuable area of human performance. Children who manifest these traits are capable of developing an interaction among the three clusters and higher the interaction greater are the chances of being gifted in different dimensions. Gifted children require a variety of educational opportunities and the services that are not ordinarily provided through regular instructional programmes.

Gifted children can be identified by applying following standardised tests and techniques:-

1) General Mental Ability Test

Any verbal or non-verbal standardised intelligence test can be used for this purpose such as

i) Group test of general mental ability by Dr.S.Jalota

ii) Group test of intelligence by Dr. Prayag Mehta

iii) Raven's Progressive matrices test (non-verbal)

2. Differential Aptitude Test

3. Creativity Test (any one)

i) Passi test of creativity

ii) A new test of creativity by Dr. Roma Pal

iii) Baqer Mehdi verbal and non-verbal test of creative thinking.

4. Observation Schedule

As regards the task commitment and other required personality traits of overall giftedness of the child, systematic observation by the Principal, subject teacher and parents should be taken as authentic proof. They may be asked to rate the different traits specially related to giftedness in four or five point scale.

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5. Interview

Interviews should be treated as supporting measure of objective identification.

Infrastructural strategies

a. Programme design

The programme for the gifted children must be learner-centred, flexible, open-ended and replete with options and alternatives, must be thoughtfully designed to provide continuity balance and harmony within the total framework of the educational system. To ensure this, two alternatives are there - (i) either separate schools for gifted children may be started with specialisation in all the disciplines or (ii) additional courses can be started in the same school having enrichment accelerated programmes for the gifted.

b. Curriculum design

The development and implementation of a curriculum which allows gifted to develop their potential and explore new domains of knowledge should be a high priority in curriculum planning. The curriculum of gifted should include:-

a) Development of abstract thining

b) Sharpening of reasoning abilities

c) Practice in creative problem - studying and solving

d) Higher cognitive process, i.e., analysis synthesis, evaluation, etc.

To develop these qualities, enrichment programmes for the gifted may be planned which may provide advance level courses in desired fields.

Accelerated programmes are also beneficial for the gifted where they cover the normal course at a faster pace. While planning the curriculum, the special care should be taken to provide opportunities to the gifted to foster creativity, critical thinking, leadership, etc. by providing goal directed activities.

c. <u>Specialized teacher preparation</u>

Recruitment of highly talented teachers is the key factor in making the programme of the gifted a success. Unless the teachers themselves are gifted, they will not be in a position to handle the gifted with confidence. The desirable qualities of the teachers for gifted should include demonstrated competenc in general educational techniques such as developing individual curriculum, utilisation of innovative techniques, use of strate high level of thinking, extensive knowledge of the subject area along with such personal characteristics such as self-confidenc

emotional stability, understanding and a desire to work with gifted students.

Special in-service programmes at frequent intervals may be required to keep such teachers conscious of their professional growth.

Evaluation

The evaluation of the programme of gifted should be conducted in terms of objectives prescribed. The evaluation can be formative or summative. Where data is collected throughout the operation of the programme and feed back is given for modification for the achievement of desired results, the evaluation is at formative level. Towards the end of the target, evaluation may be at summative level. Combination of both types has proved to be most successful.

The success of the programme of gifted children will depend mostly on proper identification and provision of accelerated and enrichment programmes in a well designed curriculum.

NATIONAL SYMPOSIUM

TITLE OF PAPER: IDENTIFICATION AND NURTURING OF TALENT IN INDIA - TH~ NCERT WAY

K.N.Saxena*

" We have a cultural notion that if children were not engineered, if we did not manipulate them, they would grow as beasts in the field. This is the wildest fallacy in the world".

Joseph Chilton Pearce
Author of 'Magical Child'

The word talent has been defined by experts in various ways. T.Crowder, J.J.Gallagher, R.S.Albert, J.W.Getzels, E.P. Torrance, M.A.Wallach, D.J.Treffinger and J.Khetana are almost unanimous that talented and gifted children have clearly marked high intellectual abilities characterised with academic excellence and hig~ manipulative tendencies. Very often people confuse the concept of talent and giftedness with possession of high IQ alone but this concept has been found to be very narrow and traditional one.

Although there is no unanimity in defining the word talent but definition given by the U.S. Office of Education (1972) seems to be fairly comprehensive and meaningful. It recorded the definition as follows :

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"Gifted and Talente are those identified by professionally qualified persons who, by virtue of outstanding abilities, are capable of high performance. Those are children who require differentiated educational programme and/or services beyond those normally provided by the regular school programme, in order to realise their contribution to self and society".

Gifted and talented children are capable of high performance and include those with demonstrated high achievement and/or potential abilities in any of the following areas, singly or in combination:

a. General intellectual abilities
b. Specific academic aptitude
c. Creative thinking
d. Participative leadership ability
e. Visual and performing arts
f. Psychomotor ability

Thus one can say that the range of talent is endless. The confusion between the concepts of the gifted and the talented is difficult to resolve. This suggests that a broad view of gifted and talented is necessary. To be precise talent and giftedness are as varied as the fields in which human beings pursue excellence.

There is a notion accepted by the experts all over the world that talent or giftedness is often characterised with high intellectual abilities, creative and divergent thinking, scientific abilities, social leadership, mechanical skills and talent in fine arts. The abilities are essentially constructive and complex in nature and help an individual to make an illustrious and laudable landmark in his span of life. Each and every personality, characterised by inter and intra individual differences, may have one and all of its attributes. The nature of individual differences is explained by the interaction of the forces of nature vs. nurture or heredity vs. environment. The attributes of talent of an individual are also attributed to the joint work-product of his inherited potential and influence of both formal or informal learning experiences. Intellectual potentialities remain essential vehicle for any kind of giftedness or talent. Talent and giftedness symbolise a constructive and complex ability or a talent that is evidently based upon, nurtured with and which for its quality expression ultimately depends upon superior intelligence.

Kirk (1970) quotes in 57th Year Book of the National Society for the Study of Education :

> " A talented or gifted child is one who shows consistently remarkable performance in any worth-while line of endeavour. Thus, we shall include not only the intellectually gifted and talented but also those who show promise in such diversified fields as music, graphic arts, creative writing dramatics, mechanical skills and social leadership".

This definition characterises a child as talented and gifted one when he is found to posses at least one or the other superior ability and puts it into concrete kind of effort to realize an outstanding performance which is socially approved and applauded. Joe Khatena in his research paper 'Educating the gifted child: challenges and response in USA' presented at the World Conference of Gifted Children held at the Royal College of Surgeons, London in September, 1975 has categorically stated, 'The overwhelming advances in so many significant facets of our lives in the twentieth century specially over the past 50 years has brought into sharp focus the recognition that these outcomes were made possible by people who were exceptionally gifted and talented-people who comprise our richest natural resource. We have also become convinced through observation and research that we cannot only tell with reasonable expectancy of accuracy who among us have the potential of becoming contributors to progress, but also that we can to a large extent arrange circumstances in our environment to help realise this more fully and speedily. Of course with experience we have come to understand that we are not in complete control of events-though we can to a great extent do something about it if we design our strategies well-and by so doing allow, with the least chance of error, the operation of arranged circumstances to bring about the successful achievement of our goals'.

Joe Khatena has also quoted in the same research paper, 'From the investigations of geniuses and other categories of highly gifted and talented people came clues about their unique characteristics **which** indicated that the gifted were generally physically and psychologically healthier people, certainly more mature and intellectually ahead of their age, mates, excelling in most human and educational activity'.

Dr. Pamela Mason, Consultant in Child and Adolescent Psychiatry, Department of Health and Social Security, USA has mentioned categorially in her research paper presented at the World Conference quoted above; as follows :

> 'Talented and gifted have hightened ability of perception and conceptualisation, and an acute awareness of situations, a drive to acquire knowledge, pursue thoughtful activity; and a strong urge to do well. They are demanding and questioning and may easily both cause and react to difficulties in the home and at school. In this way they are no different from any child except that the nature of the disturbance is often highly dramatised and heightened. They become more withdrawn, more anxious, more difficult, more deviant, more self willed than the average child. They can be arrogant, omnipotent, feeling above life and although humorous and with an easy view of the ridiculous, this humour may be sarcastic and infact be only thinly veiled contempt. They may experience extreme boredom and frustration, become lazy and under-achieving or resort to manipulations and games-playing to cause chaos amongst the family or the class. They tend to have unusual bizarre ideas, minority attitudes, be unconventional and to enjoy fantasy and have imaginary friends'.

From the above quotation it is clear that when we ddfine the intellectual potentialities of the gifted and talented we have to be equally concerned with their 'gestalt' make-up which includes a deep study of the personality traits.

Australian Schools Commission (1980) recognised the gifted and talented as exceptionals by quoting :

> "Gifted children are those possessing an outstanding degree of demonstrated competence or potential in intellectual and or creative abilities and needing different education or services beyond those provided by the regular school".

C.L.Mayer (1982) found that gifted and talented children come from a better than average socio-economic background. The parents of the children are educated and have high level of aspirations and the family, as a whole, are happy and well equipped. Such children are taller and strong. They have IQ between 115 and 180. They have command over language. They are emotionally mature and integrated. They perpetuate sound mental health and enjoy a smooth adjustment in life. Talented and gifted children are self-composed, self-confident, and self-directed individuals. They are friendly by living an individually satisfying and socially useful life. Talented children are always keen to serve society. They are decent in behaviour. They accept the challenges without any hesitation.

From the above discussion it is clear that often there is a confusion between abilities and talent and the inherent capabilities. This confusion is, of course very subtle. Inherent capacities are the natural endowments with which children are born. We can say that a particular child has an inherent capacity to become a scientist or a mathematician but we can never say that he has talent in science and mathematics until he has demonstrated such a talent in the domain of academics. In other words, capacities and potentials may be regarded as talent but abilities have to be demonstrated. There are multiple kinds of talent. Research has demonstrated that there are varied types of talent, not just the academic talent. It has been observed that one must travel through routes other than those of intelligence testing in order to comprehend and foster the manifestation of talent. The term giftedness or talent is infact an adjective that can be used to cover broad or general high level talents that may be equally important such as creative talents, planning talents, decision-making talents, forecasting talents etc..

IDENTIFICATION OF TALENT

Identification of talented and gifted is a very demanding and difficult preposition. Some children virtually identify themselves, on the other hand, some children defy

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well guided and adequately planned identification processes and procedures. The various methods and techniques for the identification of talented, therefore, should be as broad-based and exhaustive as possible. These children can be identified through closed and sustained observation of behaviour patterns, group intelligence and allied testing procedure, individual intelligence and allied testing system, systematic study of achievement and culumative records, comprehensive personality assessment techniques and through specified types of scholastic aptitude tests. The earlier we initiate the process for identification the better it is because it will avoid, hopefully, stagnation and wastage of scarce human resource to a considerable extent. The instruments for measurement will depend upon the characteristics to be measured. The process for identification must take into account the differential, cultural and social patterns and global environment from which the sample is drawn. The accepted process for such measurement through-out the globe involves assessment of basic intellectual potentials, scholastic aptitude and personality traits. Different aims, objectives and circumstances callforth different kinds of measuring instruments.

There is a general ·eling that in addition to the assessment of intellectual potentialities and scholastic aptitude the children shoulu also be placed in varied types of circumstances and situations which will aptly demonstrate his talented behaviour. These can be in the form of group or individual project work, extra-curricular achievement, assessment of creativity, innovativeness and originality and some non-intellective measures including assessment of specific personality traits.

The current state of the varied processes for identification of the talented is full of dilemmas. Infact, the realistic procedure for identifying talent should be functional, systematic, elaborate, scientific and with suitable cross-checks and should provide an elaborate psychograph of the identifi l talent. A cluster of tests and techniques should be made use of in order to obtain a reliable picture which will determine the quality and degree of talent assessed.

The National Council of Educational Research and Training (NCERT) laid the foundation of the National Science Talent Search Scheme in 1963 with the clear-cut objective of identifying and nurturing talented children in the domain of science at the end of the Higher Secondary Stage who,

through positive and accelerated type of educational environment, could be groomed to be high quality research scientists for the country. It was visualized that they will be of great value to the various national and allied types of scientific laboratories and will be an asset to the profession of teaching in institutions of higher learning. The tools used for identification consisted of a science aptitude test, a project report on a scientific theme and a detailed structured type of interview. Later on in 1977 the scope of this scheme was extended to other branches of academics like Social Sciences, Engineering, Medicine etc.. The medium of examination, which was formerly English, was elaborated to include tests in various regional languages as approved in the Indian Constitution. The original selection tests were held at the end of class XI of the then existing higher secondary system but later on it was extended to include class X and XII as a sequel to the adoption of the 10+2 system of education. At present the selection is done at the end of class X only. In 1977 the system of selection was modified as to include a test of general mental ability combined with a test of scholastic aptitude along-with a detailed structured type of interview. This system is prevailing even now. At present the initial selection is done at the state level and there is a quota

fixed for each state and union territory for sending their selected students for a final test to be administered by the National Talent Search Unit of the NCERT. Finally, 750 scholarships are awarded each year for higher studies in various academic domains including Science, Social Sciences, Medicine and Engineering etc..

There has been a lot of dissension amongst the intellectuals regarding the modus operandi of selection as practised by the NCERT and a few years back a Conference of eminent Psychologists, Professors of Psychology and Professors of Education was held in the NCERT to define the word 'Talent'. Although there was no unanimous opinion about a specific definition of 'Talent' but all the experts agreed that based on the psychology of individual differences and the clear-cut demonstration of specified talent by some, a comprehensive system for identification, based on the assessment of intellectual potentialities, personality traits and scholastic aptitude, should be developed.

EDUCATION OF THE GIFTED AND THE TALENTED

The most important aspect allied to the process for identification of the gifted and the talented is the nurturing domain. There cannot be any single approach to provide appropriate and accelerated education for the

identified talented children who have diversified intellectual and scholastic potentialities. This programme of specialised education is to take into account that the talented children need accelerated educational environment, enriched teaching and fostering of homogeneous ability grouping as far as possible. There was a strong opinion expressed by some experts in 1978 that the National Council of Educational Research and Training may think of starting exclusive Colleges for the identified talented students but the recommendation was given up in view of the fact that this step would not be very conducive from the point of view of educational and social ethics. Identified talented students have, therefore to seek admission in approved types of institutions where the teaching methods are qualitatively slightly better than contemporary institutions. Therefore, the most important aspect that has to be taken into account is that groups of young and able teachers should be developed in selected institutions where they could provide enriched programme of teaching and learning through supportive and supplementary reading and experimental materials of a higher quality. Some provision should be made in the present teacher training institutions where stress may be laid on nurturing of gifted and talented children in schools. The pupil-teachers in training colleges have to be apprised that

education of a talented child comprises of his global and gestalt development on the intellectual, scholastic and personality side. Thus education of the 'whole' child is a necessary pre-requisite for optimising worthwhile nurturing of the talented. Innovative and challenging circumstances and environment has to be generated within the framework of existing institutions where such children can find challenging and meaningful situations for interacting not only with immediate environment but also develop a process of their own for self-actualisation based on the theory of hierarchy of needs of Maslow.

There is a word of caution that all accelerated types of educational programmes for the talented students will be most effective only if they are properly integrated with the total instructional programme rather than as a separate entity. There are undoubtedly a galaxy of talent search programmes in the country (other than the one of the NCERT) but one of the weakest aspect of all these programmes is that the process of proper nurturance of the identified talent is not available to the extent one would desire.

It is, therefore, essential that the teachers, the educational administrators, the parents and other agencies involved in the process of education of the children,

adolescents and youths must realise that proper identification and nurturing of the talented is ultimately a perennial gain for the society as well as for the Nation. The four best schools for the gifted children in the world are located in Soviet Union because the psychology of individual differences and the acceptance of a philosophy of education based upon recognition of individual differences and relative merit cannot be denied by anyone in any part of the globe.

Another very crucial issue which needs attention is regarding utilitarian research needed in the area of identification and fostering of the talented and the gifted. Not much research has been done in this domain and considerable research is urgently needed to clarify the concept of 'talent' and the processes for its proper identification. Additional research is needed in discovering the various nurturing procedures which can be built-in into the existing infra-structure of education. With the opening of the Navodaya Vidyalayas this research is all the more needed in order to make this innovative scheme a success in the overall interest of the nation because with the progressive democratisation of educational opportunities, it is imperative that the talented and the gifted cannot be sacrificed at the altar of the mediocres and the slow learners.

The National Council of Educational Research and Training has undoubtedly played a very crucial role, through its National Talent Search Scheme, in speeding up the process of National Reconstruction. Some of the scholars, identified through this National scheme, are enjoying prestigious positions as Scientists, Engineers, Administrators, Management experts, Academicians, Social Scientists and Medical Specialists of excellence both in India and abroad.

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TITLE OF PAPER: GESTALT DEVELOPMENT OF GIFTED CHILDREN

Usha John*

At the International Conference on Gifted Children which was held in London at the Royal College of Surgeons in September 1975, it was unanimously decided that gifted children should not be sacrificed at the altar of mediocres. Educationists all over the world are increasingly concerned whether correct methods of teaching, testing, and examining at school and at college and at university levels may not unduly favour the conformist mentality and discourage spontaneous independent thought among those students who might make future original contributions to the creative arts, science and technology. Researches done by psychologists in this field indicate that conventional methods of education are hostile to creativity and that teachers dislike 'high creatives' even when they are academically successful and prefer teaching the more docile high I.Qs. The overall development of a gifted child is closely associated with positive gestalt and global educational environment. The school as an institution should therefore try for catering to the development of the optimum cognitive, affective and proper personality growth of the child.

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A good teacher can stimulate confidence in the timid gifted child as well as provide a sense of security for him even if he is neglected at home and in the society.

As life becomes increasingly complex the role of the creative mind looms larger than ever before in science, business, industry, as well as the creative arts and child domains. Therefore it should be increasingly realised at all levels of society that giving a better deal for the gifted child is not only in his interests but in the best interests of the society and the nation.

Unfortunately, many people still assume that the highly creative child regardless of the fact that he is a literary prodigy, gifted composer of music or a brilliant scientist is "completely crazy" and that one can't help him in any way. They are convinced that genuine talent will make its way without requiring special encouragement, perhaps even that creative genius thrives on opposition and difficulties.

In the West, until the 1940s many educationists did not care to seriously consider the problems of gifted children. Even today, in democratic countries like the U.K., and the U.S., despite the vast research work being done by psychologists

to help gifted children to fruitfully channelise their talents, there are no special establishments for the cultivation of specific abilities and aptitudes in gifted children. World famous public schools and educational establishments like Harrow, Eton, Manchester Grammar, in the U.K., and Bronx in New York, U.S.A., do not provide enough facilities for gifted children. The Soviet Union has emerged as a pioneer in catering to a wide range of special interest and aptitudes in gifted children, adolescents and youths. The four best schools for gifted children are located in Moscow, Leningrad, Kiev and Novesibrisk. Curiously enough in a communist country there is peculiar acceptance of the fact that individual differences do exist in children and the differences in interests, aptitudes, general mental ability and creativity are accepted, encouraged and emphasised and therefore there are institutions to cultivate the best talents. Reference is also invited to pioneer houses and pioneer palaces in the U.S.S.R.

In a developing country like India where there are not many psychologists where the majority of parents are illiterate and the minority though educated are guided by

the materialistic norms of success, prestige and affluence, and where teaching is one of the poorest paid professions -- the education of the gifted child becomes doubly challenging. To enable teachers to put forth their best efforts there should be more teachers' refresher courses linking national programmes with the latest international trends which are relevant to the conditions prevalent in India.

Though the normal parental instinct is to love one's children, rapid urbanisation and dislocation of socio-economic moorings have caused parents to unleash their pent up bitterness and frustrations on their children. Most of the parents who belong to the middle and lower middle classes of society look upon their children as extensions of them-selves and want them to achieve what circumstances had denied them. Most parents' understanding of careers for their children is coloured by their own perceptions, aspirations and unfulfilled dreams. They, therefore, decide about their son's and daughter's future careers long before they are admitted to schools and no amount of counselling by teachers can change their attitude and decisions. How many mothers, striving to be good housewives harbour unconscious ambitions which they project on to the child, hoping he will become the eminent surgeon, the healing wonder, the world success? In

such cases the will to power wears the mask of love. In the name of what is best the mother commits a blunder by enforcing her wish and will on the child and in believing that the child provides a splendid vehicle for her to live out the unlived sides of her psyche. She is astonished and accuses the child of being ungrateful when he rebels or withdraws into "abnormal behaviour". Such an attitude brings about a profound sense of inadequecy and guilt in a child.

Some parents who could not have college education will do everything within their means and power to see to it that their children are admitted to colleges and obtain university degrees. The fact that their children have aptitudes for careers which do not require university education is totally ignored by them. Burdened with educational slavery these children retaliate by wasting their time in frivolous pursuits.

Their favoured professions for boys being business, accountancy, medicine, engineering, law, the Indian Administrative and allied services these parents will see to it that their sons abide by their decisions. For girls teaching in schools and colleges, working in banks and

commercial organisations as executives, specialising in medical sciences are preferred to careers in nursing and the creative and performing arts because they are deemed respectable and less risky. To have a son who is an artist or a poet or a free lance writer or a daughter who acts in plays or films or is a dancer they feel would demean their status in society.

It is usually when it is too late to make amends that these parents become aware of the folly of imposing their decisions on their children. It would have been better, they realise, if their son had been allowed to become an artist. Because of his natural aptitude and keen interest in his work he would have proved to be a good artist... Through his own initiative, innovations and enterprise he would have put in his best effort to earn an income from the sale of his paintings. By abiding by their decision he is a briefless, listless lawyer who is thoroughly incompetent in his work and is consequently a burden to them and of no use to society.

The solution to this problem lies in giving aptitude tests to students at the earliest possible stage of education. These tests should be conducted in all schools -- especially the ones located in rural areas in a consistent, well

organised impartial way. Regardless of the children's creed, caste, region, background and poverty the examiners should give a fair and unbiased account of the children's genuine aptitudes. Unfortunately, in this country a process has still to be evolved that could totally eliminate favouritism, communalism and nepotism so that it is the deserving gifted child that is given opportunities and the necessary environment, financial support and facilities to fruitfully channelise his talent for the overall development of his potentialities and personality. Aptitude tests at the earliest possible stage of school education will prevent parents from imposing their decisions on their children. These gifted children with aptitudes for creative arts or scientific studies, etc., will then have to be admitted to those schools that have facilities for the study of these subjects. This approach gives the gifted child a feeling of security and desire for innovation. He gradually learns to be unafraid of being himself... is able to discover new and spontaneous ways of developing his talent and thus moves with confidence towards greater creativity.

The case of the gifted child could be likened to that of the ugly duckling who turned out to be a swan in the well-known fairy-tale. Misunderstood, despised and left alone to

defend himself a gifted child is very often the unhappiest child in the family and in the class at school. Barring a few exceptions, even parents fail to make a genuine attempt to understand their gifted children and therefore cannot be of any constructive help to them. Some cynic parents ruthlessly despise a gifted child because of his peculiar traits and inability to get high marks in scholastic tests pertaining to subjects that do not interest him -- others idealize and place him on a pedestal, both these attitudes are destructive. Apart from parents, there are older and younger brothers and sisters to be contended with too. Barring a few exceptions they tend to resent his superior capabilities and mental calibre and get vicious satisfaction in belittling him. If the members of a family are unduly pragmatic and extraordinarily egoistic -- a gifted child is bound to suffer many humiliations and frustrations in its path to self-realization and awareness of its great potentialities. Because every creative act overpasses the established order in some way and in some degree it is likely at first to appear eccentric to most people. Psychologists and counsellors need to help parents and teachers to recognise that the gifted child's abilities can be increased or decreased by the way he is treated and

that it is a legitimate function of the home and the school to provide the experiences and guidance which will free him to develop and function fully.

In India the plight of the gifted girl is invariably worse than that of the gifted boy. A girl who is a potential short story writer, poetess, artist, actress... is usually compelled to give up every professional ambition. There have been instances when close relatives have coereced gifted girls to mould their personalities for the "marriage market". Very little consideration was given by them to the girl's own inclination and gifts. Even today so many talented girls suffer from conflict and neurosis because there are so few who truly understand the personality of a creative girl. There is little question that the stifling of creativity acts at the very roots of satisfaction in living and ultimately creates overwhelming tension and breakdown. The exclusive devotion of creative girls to domestic pursuits robs the arts of a larger fraction of the genius that might otherwise be dedicated to them. The world of art has lost the talents of budding minds and for the creative girls the rich rewards of a full and creative life. The nation which has lost the services of promising writers, poetesses, painters, composers of music and ballet, singers,

dancers and choreographers is the biggest loser for it is through the work of creative people that its culture blooms. Indians being extremely conservative and traditional minded regarding the upbringing of girls many parents fear to break the traditional norms by giving in to the "whims" of their talented daughters. Even a creative parent who has a talented daughter would like her to give up all her aspirations and marry the man he chooses for her. At the early age of seven the renowned Punjabi poetess Amrita Pritam had composed several poems, but her father who was a gifted poet himself thought it best that she should abandon her love for writing poems and marry the man of his choice.., As expected by Amrita, her married life was a disasterous failure and ended in divorce.

To make matters worse the work of young, unknown gifted writers, music composers, choreographers and performing artistcs is poorly evaluated in terms of money. A talented free-lance writer in the U.S.A. and some other countries of the West can earn enough from the sale of his work to live in comfort. In India neither the Central Government publications nor the newspapers and magazines that are owned by big business tycoons care to give a fair

deal to a gifted free-lance writer by paying him/well. her It is therefore not surprising that a gifted free lance writer, however prolific she is, can barely make both ends meet. Talented performing artistes are also not well paid for their public performances. In the absence of agents and impressarios for talented literary writers, actors and performing artistes there is a desperate need for organised work in this direction. Many creative girls are unassuming and tend to undervalue their work and their ignorance of hard business tactics is often exploited.

If art is to continue to flourish it will need patronage as art has needed through the centuries -- and this requires an enlightened forward looking public. Creative people should be regarded by the nation as its proudest cultural asset. This healthy respect and regard for creative art must first be cultivated in homes where an avid interest in music, literature theatre and other fine arts is sincerely encouraged by parents. Should there be a creative child in the family every effort should be made to understand the working of her mind. More and more people should become aware of creativity as a palpable quality -- recognizable, definable, encourageable and quite separate from the intelligence that makes for high I.Qs and academic

ratings. Books on the psychology of the creative child should be read by parents. Much could be done by educating parents, particularly those in the rural areas through radio and TV programmes and open air lectures delivered by psychologists and specialists regarding the identification and up bringing of gifted children. Schools, colleges and universities too must make an effort to identify and support creative students.

Sometimes even the achievements of the gifted youngster is resented by his parents because he has proved all their dark and gloomy predictions regarding his capabilities to be false and revealed them as people lacking in objectivity and sound judgement. So instead of praising or sincerely appreciating his dedication and outstanding success they loudly curse him and wish God would "destroy" him :

Then there is the question of loyalty to the older child who "is an earning member of the family" which makes parents to despise the gifted child's qualities because "he does not contribute anything to the cash box and is rebellious and stubborn." Therefore in their eyes whatever the gifted child does is wrong and whatever the older child does is always right. The gifted child's peculiar traits and habits only invite their scorn. He is constantly made to feel

inferior to the older child who might be eight or ten years his senior in age. Such unfair comparison and scathing criticism wilt the gifted child's flickering faith in himself. Only those gifted children who are strong willed, defiant, and who have indomitable faith in themselves can maintain their individuality make sacrifices and relentlessly pursue their creative inclinations in such an atmosphere of hatred, vindictiveness and envy.

One of the most tragic plights among highly creative individuals stems from the failure of their own parents to understand them. Destructive or incapacitating hostility is the result of this failure. When teachers fail to understand highly creative children refusal to learn, delinquency or withdrawal may be the consequence. In some cases the intervention of a psychologist or a counsellor offers the only possiblility whereby parents and teachers may come to understand them.

Both parents and teachers stress scholastic achievements For most parents schools are meant for disciplining children and examining their knowledge of the subjects taught. Many parents are of the view that students who obtain high marks in the subjects in which they are examined are brilliant and gifted. But the fact is that if we were to identify

children as gifted on the basis of their brilliant success in scholastic tests we would eliminate seventy per cent of the most creative. Not all creative children are bright students at school. Such children should not be regarded as dull or backward if they scrape through their examinations. It is possible, that a highly creative child is just not interested in the subjects taught at school. Children with special talent or aptitude for science or mathematical studies or the creative arts should be provided opportunities to proceed at a faster pace at school.

There is a large [illegible] of talent spread all over the country but the attitude of parents and the educational system do not allow it to flourish. Very little is done by schools to accelerate the process of initiative and enterprise -- the spirit of adventure and scientific enquiry. Due to over-crowding of students in classes very little can be done by teachers to explore the students' environments and their worlds which could lead to better rapport and friendly communication that are so essential for the free expression of new thought processes and discoveries that are more meaningful, relevant and helpful to the students than the knowledge they acquire from some badly written and boring textbooks. Examination papers in this country are

basically designed to test information and recall of vast amounts of information that don't connect with anything meaningful. Few teachers realise that a student's capabilities and creativity can be increased by the right attitude of the teacher and that creativity is the most valuable resource in coping with life's daily stresses.

Fantasies such as imaginative role playing, fantastic stories, unusual drawings and the like are normal aspects of the child's thinking. Many parents try to eliminate fantasy from the thinking of the child, little realising that those children who have been subjected to vigorous and stern efforts to eliminate fantasy are later afraid to think. Many parents are of the view that students should not be seriously interested in anything other than their textbooks -- they should concentrate on their studies and later specialise in those subjects which will enable them to get a post that carries an attractive salary. The child who day dreams and one day blurts out to his father: "I would like to be a Member of Parliament... then you could come and hear me speak in Parliament ! is shocked into silence by his father's harsh rebuke: "Don't talk nonsense and don't waste your time wool-gathering. Money doesn't grow on trees -- I am paying your school fees with my hard-earned money.

Always remember that I'll thrash you if you don't pass your examination with distinction !" This type of father is definitely not going to encourage his son to participate in school debates or find avenues where his son can utilise his talent for debating. The girl who rushes to her mother with her "first completed short story" and is rudely commanded "to throw that rubbish in the waste paper basket. It is not going to help you to pass your examination!" may be so disappointed that she may never recover her zest for writing short stories and may lose all interest in this literary craft and her studies and life itself.

Few parents are willing to accept the fact that day dreaming is the means by which children channel vague yearnings into positive action. Both parents and teachers want to produce the conventional socially adjusted child and view the unusually talented child with suspicion. The school should help parents realise that undue destructive criticism, making fun of the child's ideas or laughing at his conclusions can prevent the expression of ideas. Parents should stimulate the child to explore, ask questions and try to find answers. They should also encourage their children to read books that expand the horizon of their knowledge. Reading good books could also help the gifted

child to improve the degree and quality of his creativity. Children's books like those published by the National Book Trust, the National Council of Educational Research and Training (NCERT) and some private publishers have to be included in home and school libraries in a much more significant manner. NCERT has brought out low-cost, well illustrated and well published books under the title of Lotus Series. The books under the serious cost only one rupee and cover subjects like fiction, folklore, biographies, science, social science and poetry for children of different age groups from pre-school to the senior secondary stage. Some of these books have been written by well-known Indian writers.

The personality of a gifted student is bound to be different from the docile mediocre students. He is bound to have certain work habits, traits and limitations that his parents don't understand because of their ignorance of the ways of highly creative children.

Much could be done by educating parents through radio and TV programmes and open-air lectures delivered by psychologists and specialists regarding the identification and upbringing of gifted children. Schools, colleges and

universities should make an effort to identify and support creative girls and boys. Books on the psychology of gifted children should be read by parents. For those parents living in rural areas there should be more radio and TV programmes on this subject. So far no consistent, constructive and well organised plan was evolved to nurture the talents of those gifted children living in the villages. They are sadly neglected and the uphill task of educating the parents and teachers has to be taken up by specialists in this field of psychology... The new Navodaya Vidyalaya scheme can fill the void to a great extent.

Teachers and psychologists can help the gifted child maintain his creativity by providing him a refuge, by helping him understand himself, by letting him communicate his ideas, by seeing that his creative talent is recognised and by helping parents and others help him.

When a parent or teacher, therapist or patron feels that the gifted child is of worth in his own right -- no matter what his present condition or behaviour, he is fostering creativity. This attitude can be genuine when the parent or teacher is is aware of the potentialities of the child and thus is able to have an unconditional faith in him, no matter what his present state.

This attitude gives the gifted child a feeling of security. He gradually learns to be unafraid of being himself... He is able to discover new and spontaneous ways of developing his talent and thus moves with confidence towards greater creativity.

When parents and teachers cease to form judgement of the gifted child from their own standards of evaluation they are fostering creativity. In such an atmosphere the gifted child realises that he is not being evaluated, not being measured by some external standards and feels free from anxieties and doubts. He will then begin to recognise his own standard of evaluation and move towards greater creativity.

When parents, teachers or psychologists permit the gifted child a complete freedom of expression in his field of work be it scientific experiments, art or literary fiction, creativity is fostered. This freedom fosters the openness, and the playfulness and spontaneous juggling of percepts, concepts and meanings which is a part of creativity. This permissiveness is not indulgence. It is permission to be free and responsible. The child is free to be cautious of a new venture as to be eager for it, free to bear the

consequence of his mistakes as well as his achievements. It is this type of freedom and responsibility to be oneself which fosters the development of a secure standard of evaluation within oneself, and hence tends to bring about the inner conditions of constructive creativity.

With all the limitations, our country has made some positive contributions in the identification of the gifted child. There are some significant schemes sponsored by the Government of India, like the National Talent Search Schemes of the NCERT, the National Rural Talent Search Schemes, and some minor schemes in the States and Union Territories.

The National Science Talent Scheme is concerned with identifying brilliant students at the end of the school stage of education. Under this scheme every year a maximum of 350 scholars are selected from all over the country. They are identified through aptitude and identity tests. The entire education of the selected scholars is taken care of by the NCERT.

The National Rural Talent Search Scheme is sponsored by the Central Government's Ministry of Education. Since 1972 this scheme has been providing academic encouragement and economic assistance to talented children hailing from rural

areas. The academic, financial and social benefits are available to talented and creative children for a period of three years, terminating at the end of school level. This scheme covers an age group of 13+16+. Under this scheme every year 10,000 children are given assistance. The scholarships are distributed in such a way that there are two scholarships for each Community Development Block.

Every year the Cultural Talent Search Scholarship awards 125 scholarships to children in the age group of 10-14 years for pursuing fine arts such as Music, Dancing, Painting and Sculpture.

On a merit-cum-means basis the Central Ministry of Education and Social Welfare launched a scheme under which a competition is held all over the country for identifying and nurturing gifted children belonging to poor families. The age group covered is between 10 and 13 years. The selection is done with the active assistance of the NCERT.

On the basis of the Report on the World Conference on Gifted Children it has been realised that some vital changes have to be brought about by the National Council of Educational Research and Training and the Ministry of Education in the overall teacher training programmes, both

at the primary and secondary levels. One important subject matter is regarding the identification and fostering of the gifted and academically talented children. The scope of the theme incorporates "special education" as a curricular subject.

It is interesting to note that the resolves of the National Policy on Education 1986 include "Children with special talent or aptitude should be provided opportunities to proceed at a faster pace. Comprehensive evaluation that incorporates both scholastic and non-scholastic aspects of education spread over the total span of institutional instructional time will replace the present examination system. Gifted children frequently have pronounced competence in a limited subject area accompanied by indifference in certain other areas. Therefore arrangements for such students cannot be fitted into regular courses of study. Special arrangements for such students will have to provide teaching, learning on modular basis for very small groups of students in a smaller number of subjects of interest to them. A detailed project for this purpose should be worked out by a specially constituted group. The Programme of Action highlighted the long awaited need in India to make education joyful, inventive and satisfying learning activity, rather than a system of rote, cheerless, authoritarian instruction.

But all these efforts are like a drop of water in the ocean because the matter has not been clinched in the proper perspective. There are millions of gifted children especially in the rural areas who go into the darkness of oblivion with the quick passage of time. This callous approach is most unfortunate, for the richest contributions to art, literature, vocal and instrumental music, dance, drama, science and technology have come mostly from the middle class and poorer sections of society. Given the appropriate encouragement and facilities gifted children can have a better and brighter future. And these children can through their creations bring about an advancement in our cultural, scientific and technological spheres.

And there are millions of gifted children in the big cities whose initiative and talents are crushed under the ruthless wheels of a commercial and mercenary society.

With the basic progressive foundation of the current national policy of education 1986 let us resolve right now that sincere efforts have to be made at all levels of educational development to stop immediately the sacrificing of the gifted and talented at the altar of the mediocres and slow learners.

TITLE OF PAPER: STATUS OF CHILD IN LAW AND ITS RELEVANCE TO CHILD EDUCATION

K.D.Gangrade*

Status and position of children in law are extremely critical input required to understand and develop appropriate strategies for child-oriented education in India. In the absence of such a knowledge the policies, programmes and legislatures pertaining to education of children will only remain in papers and may become merely academic exercise.

The child for the purpose of this paper has been defined as a boy who has not completed the age of 16 years and a girl who has not attained the age of 18 years. The children as per National Policy adopted by us are the supreme asset of the country. In this paper an attempt has been made to discuss the problem under three critical categories - 1. Acceptance of child in Indian society, 2. Assessment of policies and programmes, and 3. Accountability and responsibility of the society. The first

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examines the importance and place of child, specially in relation to our poverty syndrome. The second critically analyses various legislative measures and their deficiencies. The third cautions that undue emphasis should not be placed on constitutional and legal methods. The thrust of the paper is that a sound growth and development of child depends on an integrated approach in which all the three institutions - family, school and political domain are involved in the best interest of the child. A comprehensive children act is the need of the hour for protection and care of the child, his health, education and nutrition should receive top priority in schemes and programmes of the child.

IMPORTANCE

Future of any nation is dependent on its children. They have to be adequately fed, properly clothed and reasonably sheltered. They have to be provided with congenial and conducive environment to grow and develop into good citizens. Their latent potentialities must be allowed to flower and blossom by the adult world.

The importance of children is world wide. In traditional India, no family unit was considered complete

without children. The barren women did not have much respect in the society. When the wife proved barren, the man took another wife and that settled everything. If after a few years of marriage, the couple did not produce an offspring, there would be raising of eye-brows, whispering behind their backs, lamenting concern and pressure from all concerned. Did not the Shastras say "Putresti Kriyathe Varya"? (A wife is taken for the sole purpose of begging a child).

A girl from the childhood is socialized with the idea that her usefulness in the family lay in producing sons and more sons. In modern time, if wife proves to be barren or is incapable of bearing a child for one reason or the other, the man can take wife only after divorcing his first wife. Adoption is another possibility. But science has come to his help. Here in comes surrogate mothering. A woman capable of bearing child lends her womb to hold the baby of another man whose wife is not capable of doing so.

The male child is preferred over the female child. The family prestige depends largely on wealth and manpower; boys are potential manpower and bearers of and fighters for the family name. Also, a son is necessary for fulfilling

ancestral obligations and for the performance of certain rituals and rites. A girl on the other hand, is always a financial liability. She is to be given extensive dowry in marriage. Mostly investment on her bringing up or education is considered wasteful. This attitude is carry over of the values prevalent in Vedic period which has been aptly summarized in the Atharva Veda: "The birth of a girl, grant it elsewhere, here grant a boy."

The stress on corporate life and responsibility of members in India towards dependents of all types provides care and protection to needy children. The cultural values and socialization process in India tend to make a child family-centred. Consequently, he develops a personality pattern characterized by loyalty, cooperation and self sacrifice.

The supreme importance of children as human resources has been recognised and appreciated by both developed and developing countries. In the Soviet Union when food was in short supply Lenin is reported to have ordered, "Feed the Red Army and the ....Children." The condition of the French people before the revolution was so miserable and pitiable that they prayed to God to make

their women barren. Mahatma Gandhi wanted his followers and band of workers to observe strict celibacy rather than produce slaves in a colonial India.

The policies, plans and programmes developed by national and international government and voluntary agencies have hardly touched the fringe of the problem. The children continue to be neglected, deprived, and suffer at the hands of the adults due to wrong priorities and policies. There seems to be some conspiracy against the children as lot of money is spent on armaments and armies rather than on building the future generation. This distortion has compelled a good many children in the third world to miss their childhood. They are forced by their poverty to take to work to feed themselves as well as members of their families.

The total number of child workers, i.e. less than 15 years of age, were 10.74 million, as per 1971 census. They represented 4.7 per cent of the total population and 5.9 per cent of the total labour force. Of these 7.9 million were boys and 2.64 million girls. The National Sample Survey (NSS) in 1978 put it at 16.25 million. This figure has risen to about 19 million today.

THE PROBLEM

There is terrifying and dehumanizing poverty in the third world. In fact, in many countries even drinking water is a luxury. Wells are often more than 20 feet deep and women walk nearly a kilometre to draw one bucket of water. Then they walk back and repeat the operation to draw another. The houses in the villages are rarely more than mud-huts, the children are invariably potbellied, stunted and diseased.

It is an inescapable fact that half of the population of India lives below the poverty line. The real material income has come down by five per cent and per capita real income by seven per cent during 1979-80. The purchasing power of the rupee was exactly half in 1979 of what it was in 1970. In 1981 it was estimated that the overall growth rate would not be higher than four per cent. Unemployment registered a seven-fold increase from about two million in 1970 to 14 million in July, 1979. The half of the Indian population below the poverty line accounts for only 19 per cent of the aggregate consumer expenditure. The other half controls the remaining 81 per cent. Households with no land or with holdings of less than one acre each form over 40 per cent of the total rural population and

their share of the total operated areas is less than two per cent. About five per cent of the rural households possess nearly 40 per cent of the total operated area of agriculture. The number of wage earners among rural households has risen from 35.3 million in 1964-65 to 54.6 million in 1974-75 - an increase of over 34 per cent.

The then planning minister, Mr.S.B.Chavan, told the Lok Sabha on Tuesday, 2nd November, 1982, that the Sixth Plan envisaged a substantial reduction in the percentage of people below the poverty line. In 1972-73 the percentage was 52. By 1977-78 it had come down to 48. The Sixth Plan envisaged a further decline to 30 per cent. The rural development programmes aimed at benefitting 15 million families of whom 5.8 million had already been benefitted during the first two years.

The common man slogging at the bottom of the social pyramid, has nothing to fall back upon. There is no possibility of a decent future for his child. The appalling poverty and stark reality of life often drives poor people to mortgage or sell or take a desperate step to kill their children. It has been reported in the Times of India of October 25, 1982 that poverty made a woman sell her child for a mere Rs. 17.00.

Another report that appeared in the Times of India of November 3, 1982 tells a different story. The Santhals who are on the verge of starvation take in their stride even molestation of their women by forest officials, contractors and mahajans (money lenders). But the prospect of having nothing to eat is driving them to despair. The poorest of the Harijans, that is, Musahars of Bihar, have been through child marriage debts traditionally bonded to money lenders or landlords. They being professional rat catchers, live on the grain retrieved from the extensive burrows made by field rats. Such is the degradation of life that has not completely ended in Bihar.

According to 1981 census child population is estimated to be 255 million. Out of these 118 million - 99 million rural and 19 million urban live below poverty line. This makes extremely difficult for eighty per cent of Indian children to get adequate nourishment required for normal physical and mental growth. At the present rate of our economic growth the families of these in our country would require to double their earnings to attain adequate buying capacity.

The consequence of malnutrition on pregnant and lactation women is so high that India still has the third highest infant mortality rate in the world. A staggering total of 47 per cent of the deaths in the country took their toll in the age group zero to four years. The under one month age group accounted for 21 per cent of the total deaths.

According to Dr.C.Gopalan, Director, Nutrition Foundation of India less than three million of the 23 million children who are generally born in India, will become truly healthy, physically fit, productive and intellectually capable citizens of the country. He further says that three million of the 23 million may be expected to die in their very first year, and another million before they complete their childhood. Of the remaining 19 million, nearly nine million will reach adulthood with impaired physical stamina, low productivity and low mental abilities because of serious under-nutrition and ill-health during childhood, and seven million who suffer milder forms of malnutrition will grow up with less striking physical and mental impairment.

A recent study in villages around Ludhiana which are booming in prosperity and where only 11 per cent of the rural population is below poverty line has shown that the infant mortality rate has not declined and the number of premature low light weight babies has increased. Development has hit the mothers in the poor communities as "prosperity" for them has resulted in more work, more food to be cooked for the family, little time for infant feeding. Especially, the female children of these mothers are hardest hit and 50 per cent of the girls and 20 per cent of the boys below five years suffer from severe malnutrition in prosperous rural Punjab, (The Times of India December 28, 1982).

Thus, while the death rate has definitely come down, the mortality rate among the younger elements of society has maintained itself. Under these circumstances, it has been computed that an average Indian family required 35.6 (that is at least five) children to ensure that two survived. A lowering of infant mortality rate by a package of health services could influence the subsequent birth rate. There is a clear-cut correlation between the literacy of women and the population growth rate as per 1981 census.

(Report of Registrar General of Census). These children need services related to health, nutrition, education and access to safe drinking water supply. These services will ensure their longevity as well develop them into good citizens.

We have allowed children to continue to suffer. We have made them gun fodder for our lust, greed, power and money. We spent billions of dollars on armaments and in maintaining armies. For example, the cost of one destroyer, Rs. 900 million is sufficient to provide electricity to 13 cities and 19 rural zones. The cost of one jet fighter, Rs. 180 million, can provide medical facilities to 40,000 villagers, while that of one HAWK ground attack air craft is what is needed to bring water to 1.5 million people. What is more, the amount spent on military force and arms in the world in two weeks could look after the food, home, health and education requirements of all the people in the world. The world has been spending nearly Rs. 600 billion on arms which works out to be more than one million dollars a minute. This mad rush must be stopped if we are interested in making children supreme assets of the nation.

LAW

Every society has some machinery for upholding norms, settling disputes and dispensing justice. In simple societies law shades into customs and is upheld through informal procedures and sanctions. In a complex society the legal orders is more clearly distinguished and carries a heavy burden of social integration. Legal recognition lends coherence, regularity, and acceptance to social forms and codes of conduct. The major functions of a legal system are: 1. Maintenance of public order. 2. Upholding rights and duties. 3. Facilitating cooperation. 4. Conferring legitimacy. 5. Communicating moral standards. But the image one has of the law depends on where one stands on the social ladder. For the affluent, law is usually helpful and protective; for the poor it is more often alien and oppressive. The recent judgements of the Supreme Court and other Courts are in the realm of social advocacy of law. There is abundance of evidence that law can be used to enlarge rights and challenge injustices.

In a society ridden by caste prejudices, illiteracy and narrow outlook, social legislation can be introduced

only in stages. Century old customs, traditions and beliefs, however primitive they may look to the modern eye, cannot be thrown out overnight. To mould the Indian society consisting of several religious faiths, linguistics and ethnic groups, and sub-cultures into one compact unit is a herculean task by any standard. One can reform or change or develop society either through welfare measures, which must be provided in abundance, or through persuasion by creating a public opinion against ageold prejudices, and lastly by legislation. Law as an instrument of social change may help in protecting and safeguarding the interests of the children. Social change, here, meant bringing about a change in social attitudes, a change in the minds and hearts of the people concerned. Mahatma Gandhi said: "Rule of Dharma or social law determines the duties of man". Rights he added, "follows from a due performance of duties". The causalties of state legislation are the sense of social duty and obligations. Under these conditions, social development is bound to be lopsided, irrational and inherently unjust. It merely strengthens the power of the State to intervene by means of ameliorative legislation in the interest of weaker section of the community. But in the process even the weaker section becomes weak and ineffective.

Mahatma Gandhi emphasized "Social legislation, however, radical it may seem, in order to be effective, must have moral sanction behind it, which does not merely rest on the power of the State, but on the 'willing submission', of those who are expected to obey the law and the consent of the vast majority who wish the law to be obeyed for the good of the society. It is the social consensus, which is the real sanction behind social legislation". For this reason Gandhi advocated decentralization as far as possible, of law making, of sanction and of law enforcement, in order to generate the effective sanction behind any practical programme of social development at the grass root level.

In his scheme of things social development or social change was a kind of nature cure. It was lack of it which was the breeding ground for crime. The exploiter of children or criminal, he said, "was only an indication of the social malady and since nature cure meant cure of the body, mind, and soul, my nature cure included the healing of the mind, and soul too." Since development and social legislation, therefore, aimed at the elimination of the extremes of wealth.

Social legislation may work as catalyst to bring out desirable radical change in social structure and to eliminate conspiracy of the adult world against the children. The effective implementation of legislation will depend on mass awakening and preparation of people before enactment of laws.

Constitution of any country lays down the goals, aspirations, duties and rights of the people. It provides the necessary parameters and dimensions for enactment of legislations. In other words, the Constitution of India is our fundamental law and source of all legislation - whether social or otherwise.

Constitution

The preamble vests the sovereignty in the people of India. Th~ opening words of the preamble 'We the people of India........', highlight the influence of Gandhi for whom suzerainty belongs to the people of India so that they feel free to shape their own destiny. The Constitution was, therefore, a gift of the people to themselves. Thus the words 'We the People' reflected the substance of popular will as propounded by Gandhi. The preamble embodies the sovereignty of the people not as a legal fiction but

derives its roots, authority, its sovereignty from the people. The essence of the Fundamental Rights lies in the inviolability of the dignity of the individual. Gandhi's ideal society is the state of enlightened anarchy where social life becomes so perfect as to be self-regulated. Therefore, 'that Government is the best which governs the least.'

Justice is the pivot around which the administration of a non-violent society revolves. Certain fundamental and basic rights have been guaranteed to all citizens by the Constitution. Article 14 guarantees equality before law and equal protection of law. Article 15 lays down that the State shall not discriminate against any citizen in respect of employment solely on the ground of religion, race, caste, sex, place of birth or residence. Article 17 reiterates the declared policy of Government to abolish untouchability and its practice in any form is forbidden. This should protect from discrimination the children of scheduled castes and scheduled tribes.

Legal equality without social equality is shameful and meaningless for it would destroy the basis of democracy by reintroducing the same old differences in status. The Indian

Constitution puts seal of legality on social equality for which Gandhi fought relentlessly. Article 15 could, therefore, be traced to the teachings of Gandhi who believed that 'democracy can only exist and flourish amongst a society of equals. The special treatment meted out to women and children in Article 15 (1) (2) reflects Gandhi's humanitarianism. Clause 4 of Article 15 aims at ushering in an equalitarian society in which grave inequalities resulting either from social disparities or indifference on the part of the State should not exist.

As an adjunct to the guarantee of personal liberty and the prohibition against discrimination, the Constitution lays down certain provisions to prevent exploitation of the weaker sections of the society who, compelled by crushing poverty, allowed themselves to be exploited by unscrupulous individuals or even by the State. The Constitution in Article 23 and 24 puts an end to such exploitation by prohibiting traffic in human beings.

Article 23 lays down that (1) Traffic in human beings and begar and other similar forms of forced labour are prohibited and any contravention of the provisions shall be an offence punishable in accordance with law, (2) Nothing in Article shall prevent the State from imposing compulsory

service for public purpose, and in imposing such service the State shall not make any discrimination on grounds of religion, race, caste or class or any of them.

Traffic in human beings means dealing in men and women like goods, such as to sell or let or otherwise dispose them of. It also includes traffic in women and children for immoral or other purpose (Raj Bahadur Vs Legal Rememberancer; A I R 1953 Cal. 522). Begar means involuntary work without payment. But a voluntary agreement to do extra work for payment is not begar or forced labour (Sham Bai Vs State of U P, A I R 1959 All. 57). Not only Begar but also "other forms of forced labour" are also prohibited by Article 23 and therefore no one can be compelled to work against his will even for payment. A custom in Manipur State according to which each householder in the village was required to offer one day's labour to the headman of the village was declared unconstitutional for violation of Article 23 (i) To penalize person violating Article 23 (i) Parliament, in addition to other laws, has passed the suppression of Immoral Traffic in Women and Girls Act, 1956 and Bonded Labour System (Abolition) Act, 1976.

Under clause (2), State can impose any compulsory service for public purpose. "Public Purpose" is a wide term and will include all that will be calculated to promote the welfare of the people as envisaged in the directive principle (Dass J in State of Bihar Vs Kameshwar Singh, A I R 1952, 290).

Article 24, which prohibits employment of children in factories etc. reads: No child below the age of fourteen years shall be employed to work in any factory or mine or engaged in any other hazardous employment. There are laws prohibiting employment of children in factories (See for example, the Employment of Children Act, 1938, Sec.3 and the Indian Factories Act, 1948), but Parliament seems to have passed no law to enforce specifically the provision of Article 24.

According to the judgement of Supreme Court the employment of Children in Asiad below the age of 14 was clearly a violation of Article 24. In the judgement of Mr. Justice P.N. Bhagwati and Mr. Justice Bahrul Islam : The Rule of Law does not mean that the protection of law must be available only to a fortunate few or that the law should be allowed to be prostituted by the vested interests for protecting and upholding the status-quo under the guise of enforcement of civil and political rights.

The poor too have civil and political rights and the Rule of Law is meant for them also, though today it exists only on paper and not in reality. If the sugar barons and the alcohol Kings have the fundamental Rights to carry on their business and to fatten their purses .... have the Chamars belonging to the lower strata of Society no Fundamental Rights to earn an honest living through their sweat and toil? .....having regard to the peculiar socio-economic conditions prevailing in the country..... obstructing and impending the accessibility to the Judicial process would result in closing the doors of the justice to the poor and deprived sections of the community evolved by Anglo-Saxon jurisprudence that only a person wronged can sue for judicial redress were to be blindly adhered to and followed.

By enlarging the scope of Article 23 of the Constitution the Court has extended its protection to the workmen not only against the State but also against private citizens. The court said the Article 23 was wide and unlimited and it struck at "traffic in human beings and begar and other similar forms of forced labour where they are forced.

The Article 44 relates to uniform civil code throughout the territory of India. This directive has stood in the Constitution for more than thirty one years without any success towards a uniform civil code though there is a great need of it which is also sometimes expressed in discussions on this aspect, particularly in relation to reforms in Muslim personal law.

The Article 45 of the Constitution envisaged free and compulsory primary education. The article reads : The State shall endeavour to provide within a period of ten years from the commencement of this Constitution, free and compulsory education for all children until they complete the age of fourteen years.

The Article 46, under which controversies have arisen, reads: The State shall promote with special care the educational and economic interests of the weaker sections of the people, and, in particular, of the Scheduled Castes and the Scheduled Tribes, and shall protect them from social injustice and all forms of exploitation.

The next directive is contained in Article 47 which reads: The State shall regard the raising of the level of nutrition and the standard of living of its people and

improvement of public health as among its primary duties and, in particular, the State shall endeavour to bring about prohibition of the consumption, except for medicinal purposes, of intoxicating drinks and of drugs which are injurious to health.

The Constitution also provides for freedom of conscience and the right to profess, practise and propogate any religion.

To sum up the Constitution and the Directive Principles of State Policy contain ultimate goals, principles and guidelines on which future legislation is to be based.

Specific Legislations

Child Marriage Restraint Act 1929: This Act is popularly known as the Sharda Act. Many people may not be aware that the Act is applicable to all communities and all persons living in India. This die-hard practice of child marriage, inspite of the Act, persists even in modern times. In 1958, 84.5 per cent girls were married by the time they were 15. In the decade 1971-1981 fortunately the average age at marriage for girls has risen from 17.2 years to 18.3 years

The non-compliance with age requirement of this Act does not invalidate the marriage. The act, as the name implies, only restrains the people from performing child marriage and to make the restraint effective it imposes certain penalties on persons bringing about such marriages.

Section 5 of the Act imposes penalty on the persons like priests or other celebrant who perform, conduct or direct a child marriage. The law imposes an obligation on the person who solemnizes a marriage to make a reasonable enquiry as to the ages of the parties to the marriage and satisfy himself that neither of the parties are below the minimum ages prescribed by the Act. Section 6 provides for penalty for the parents or guardians of the parties to the child marriage and rightly imposes a higher obligation for not only where they promote a child marriage but bring them under the net even where they permit it and negligently fail to prevent such a marriage.

Child Marriage Prevention Officer: The State of Gujarat by an amendment of the Act by its Act 11 of 1964 has provided for the appointment of child marriage prevention officers with the duties (i) to prevent marriages being performed in contravention of the provisions of the Act;

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(ii) to collect evidence for the effective prosecutions of persons contravening provisions of the Act; and (iii) to discharge such other functions as may be assigned by State Government. For the effective discharge of these obligations, the Government may invest him with such powers as of a police officer.

Legitimacy of Children of Void and Voidable Marriages: Any child born or conceived before the decree of nullity is granted under sections 11 or section 12 of the Marriage and Divorce Act would be considered to be a legitimate child of the parents as if the marriage has been dissolved. But such a child would not be capable of inhereting the property of any person other than the parents.

Posthumous Child: Under the Hindu Succession Act 1956, the right to the property arises from the date of conception, therefore, a child who is in the womb of the mother at the time of death of intestate and is subsequently born alive shall have the right to inherit the intestate as if he or she had been actually born.

The Act provides for maximum punishment of 15 days of simple imprisonment and a fine of Rs. 1,000 for the bridegroom who is more than 18 years of age but less than

21 years of age and who contracts a marriage with a bride less than 15 years of age. If the bridegroom of such marriage is more than 21 years of age the maximum punishment is enhanced to 3 months of simple imprisonment and is also liable to a fine.

The legislation, alongwith the disintegration of the joint family system and economic compulsion, has helped raise the age of marriage and has curbed the practice of child marriage.

Law of Adoption

The traditional law authorized a sonless Hindu father to adopt a male child. Once a person was adopted, there was a severing of his connection from the family of his birth, and he was transplated in the adopted family. The traditional Hindu Law did not permit a widow to adopt a son unless specially authorized by the deceased husband. The Hindu Adoption Act removed many of the lecunae of the traditional law and gave right both to the male as well as female to adopt a child of any sex. The law of adoption is applicable only to Hindus. As for Muslims, though there is no Koranic law to that effect, adoption is regulated by custom. Recently, a demand has been made by educated Muslims for enactment of a law authorising adoption among Muslims.

To prevent the adoption turning into trade section 17 of the Act provides that : (1) No payment or other reward in consideration of the adoption of any person, and no person shall make or give or agree to make or give to any other person any payment or reward, the receipt of which is prohibited by this section. (2) If any person contravenes the provision of sub-section (1) he shall be punishable with imprisonment which may extend to six months, or with fine or with both. (3) No prosecution under this section shall be instituted without the previous sanction of the State Government or an officer authorized by the State Government on this behalf.

Under Section 9 of the Hindu Adoption and Maintenance Act, 1956, only the parents or the guardians can give a child in adoption. A male adopting a female child should be older than the girl at least by 21 years. Similarly, a woman taking a male child in adoption should be at least 21 years older than the boy.

Under Section 20 of the Act, a legitimate as well as illegitimate child is entitled to maintenance by the father or mother so long as the child is a minor. The heirs of a deceased Hindu are obliged to maintain the dependents of the deceased.

The Supreme court had declared that to protect children from exploitation, it wanted to lay down norms and procedures for the adoption of Indian babies by foreign parents. The court stated this when a lawyer, Mr.Laxmi Kant Pande, moved a writ petition pointing out the export report in a British paper and sought a proper investigation into and stoppage of the practice.

The Act has been criticized for not providing for state supervision of adoption. State intervention may be helpful in checking misuse of the law. A bill titled the Adoption of Children Bill, 1972, pending before the Parliament, takes care of these matters. The passage of the Bill will be a long step in the direction of a uniform civil code envisaged by Article 44 of the Constitution, because it will apply to all persons. Muslims opinion is opposed to it because adoption is inconsistent with Koranic law. However, since the Bill does not make adoption mandatory but only seeks to regulate those that do take place, such Muslims as refrain from adopting will not be affected.

The Guardian and Wards Act, 1890

In the interest of or for the welfare of a minor, the court can appoint a guardian of the minor's person or property, or remove a guardian who has not been appointed by will of the deceased parent or guardian or by the court itself. While the Hindu law on minority and guardianship has been codified the Mohammendan law is still uncodified. The Hindu Minority and Guardianship Act of 1956 now lays down that the father of illegitimate children has no preferential right. The illegitimate daughter, even of a Shudra, had no right of inheritance from her father.

The law relating to guardians recognizes four kinds of guardians : (1) Natural guardians, (2) Testamentory guardians, (3) De facto guardians, and (4) Guardians appointed or declared by the Court. The guardianship of the first three kinds is determined, particularly in the case of Hindus and Muslims, by the personal law of the minor, the guardianship of the fourth kind is determined under the provisions of the Guardians and Wards Act, 1890.

Labour Laws

As already stated the Constitution of India provides for the care, protection and provision of adequate facilities

for the proper development of its future citizens: Articles 24 and 39 are most important for the employment of children. Article 24 states: No child below the age of fourteen years shall be employed to work in any factory or mine or engaged in any other hazardous employment. Article 39 : The state shall, in particular, direct its policy towards securing that children of tender age are not abused and children are not forced to enter a vocation unsuited to their age or strength.

The various labour legislations enacted in India from time to time aim at providing legal protection to children against exploitation. But the Factories Act 1948 is the real land mark in this respect. The Factories Act 1948 prohibits the employment of children upto 14 years of age. It extends to whole of India and is applied to establishments employing 10 or more workers with power or 20 or more workers without power and provides for medical examination of young persons between 15-18 years employed at work.

The Mines Act, 1952 is an All India Act. It includes all excavations where any operation for the purpose of searching for or obtaining minerals is carried out; provided

that no child shall be employed in any mine, nor shall any child be allowed to be present in any part of a mine, which is below ground or in any open coast working, in which any mining is being carried on.

The Plantation Act 1951, covers all tea, coffee, rubber, cinchona, and cardamom plantations, admeasuring 10.17 hectares or more in which 30 or more persons are employed. The employment of children below the age of 12 is prohibited under the Act.

The Merchant Shipping Act, 1958 applies to ships registered in India and provides that the employment of children below the age of 15, with certain exemption, is prohibited.

The Motor Transport Workers Act, 1961 applies to whole of India. It covers every motor transport undertaking employing 5 or more transport workers. The State Governments are, however, empowered to apply all or any of the provision of this Act to any motor transport undertaking employing less than 5 workers. This Act too prohibits the employment of children below 15 years of age in any capacity in the motor transport undertaking.

The Employment of Children Act, 1938 prohibits employment of children under fifteen years in occupations connected with the transport of passengers, goods or mail by railways; or connected with the port authority within the limit of any port.

The Apprentice Act, 1961 says that no person under the age of 14 would be given training unless he satisfies such standards of education and physical fitness as may be prescribed.

The Bidi and Cigar Workers - Condition of Employment Act, 1966 defines the child as a person who has not completed fourteen years of age. It states that no child shall be required or allowed to work in any industrial premises.

The Shops and Establishments Act regulate, inter alia, the daily and weekly hours of shops and establishments, payment of wages, over-time pay, holidays with pay, annual leave, employment of children and young persons, etc. The minimum age is fixed at 12 years in all the States, except Andhra Pradesh where it is 14. These Acts also prohibit the employment of young persons during night between 7 p.m. to 6 a.m.

Under the Children (Pledging of Labour) Act 1933 (Amended by Act No.3 of 1951 and A.O.1950) pledging of labour means any parent or guardian who makes an agreement written or oral, expressed or implied, in return of any payment or benefit received by him for the services of the child to be utilized in any employment. Any agreement contrary to this Act is considered to be void. The parents or guardians who enter into any agreement are punishable with a fine extended to rupees fifty. The person who makes any agreement with parents or guardians for the employment of children is punished with a fine of two hundred rupees. Under this Act, the persons who employ the child or any agreement to receive the labour of the child are punished.

The Minimum Wages Act, 1948 provides for the fixation of (a) a minimum time rate of wages, (b) a minimum piece rate wages, (c) a guaranteed time-rate of wages and (d) an overtime of wages, for the different occupations, localities, or classes of work for adults, adolescents, children and apprentices.

The Radiation Protection Rules 1971 provided under the Atomic Energy Act, 1972, prohibits the employment of children before the age of 15 and 14 in certain sectors of industry.

Legal measures have proved inadequate to eliminate the evils of child labour particularly in unorganized industries and rural vocations. Even though laws are enacted, implementation becomes difficult because of the scattered nature of child employment. The employment of children is both an economic and a social problem. The economic aspect of the problem can be solved by providing adequate economic means, i.e. by increasing the income of the parents. If the father gets more income, he may be less inclined to send the child to the labour market. Hence, economic development provides the long-term answer to the problem of child labour.

The social aspect can be tackled by arousing the consciousness among the people themselves. Education has an important role to play in this field. Kerala State which has the highest rate of literacy in India has the lowest rate of employment of children.

Violation of Laws - A case of Delhi : In the absence of proper statistics a conservative estimate is that about 60,000 children are employed in the eating (Dhabas) places in Delhi. Mr R N Puri, the Labour Commissioner of Delhi Administration says that two specific laws regulate the

employment of these children. The Delhi shops and Establishments Act, 1954 regulates their hours of work, rest intervals and working conditions, while the Minimum Wages Act, 1948, stipulates the minimum wage to be paid to them. The first permits employment of children above the age of 12 for a maximum of six hours a day. And the minimum wage for an unskilled worker has been fixed at Rs. 300/- per month.

Mr Puri further says that these laws are universally violated. "And if we conduct raids, the sufferer is invariably the child or the employee, who is dismissed immediately." Mr Puri says: "Not long ago he ordered a series of raids on Dhabas and Halwai shops, but very little came of it." Though his department launched 30,000 prosecutions last year, none related to children's wages or their hours of work.

"Most owners don't maintain records of those on their pay rolls." Mr Puri says, "and even those who do will not register the name of the children. If they are confronted with it, they will say that the child is his son or a relative". Enforcement of these laws is next to impossible. As a result, little effort is made to implement

them. Since the Witley Report on Child Labour over 50 years ago, there has been no change in the conditions of working children in India notwithstanding constitutional provisions or the plethora of legislation to protect them. There is no doubt that the problem of child labour cannot be legislated away, because its roots lie in extreme poverty.

Bonded Labour : The Indian Parliament had enacted a law by the name the Bonded Labour System (Abolition) Act 1976 by banishing all kinds of bondage in the country. Of all the bondage type, the agricultural debt bondage is the biggest menace to human dignity and makes the agricultural labourer vulnerable. A study by Gandhi Peace Foundation of ten States found that the number of agricultural bonded labourers was 2.6 millions in 1978. Of these 86.6 per cent of the bonded labourers come from the Scheduled Caste and Scheduled Tribes. Twenty five per cent of the bonded labourers belong to the age group below 20 years, an indication of the fact that child and youth bondage has taken roots in the Indian rural society. The abject poverty and resultant incapacity to meet the three basic needs (food, shelter, and clothing) drives the labourer into bondage. This will need a considerable structural change specially in land-man relations. The land reforms have not done much

in this respect. It should be emphasised in this context that the Republic of India of which the people of India are said to/be the creators, is even more to blame for such a state of affairs than the master of these labourers. A study of Uttar-Pradesh reveals that more than 50 per cent families have found to be hereditary victims of the bondage system. As many as 81 per cent are illiterate. It has thrived because the villagers take loans for marriages and polyandry (hill areas) makes women a "bonded economic property."

Education

The importance of education and specially of infant has, of course, long been recognized. But the placing of the pre-school child firmly on the lucational map came only with Friedrick Froebel in the 9th century, and Dr Maria Montessori, whose first children's House set up in Rome in 1907. In India much of official indifference in this regard can be traced to the fact that pre-school education is considered something of a luxury and a purely urban phenomenon. Yet, an Estimate Committee report to the Lok Sabha in March 1959 regretted that "there is not even an All India Policy ...... on the most important and crucial

period of life of a child". The Education Commission of 1964-66 urged State level involvement in the matter, and in 1967, a committee appointed by the Government of India targeted pre-primary schooling for at least 10 per cent of two to six years old in the country in the period 1970-80, with preference being given to the economically backward segments of society. For obvious reasons, that target is yet to be fulfilled on a nation-wide basis.

The enrolment of children in the age group 6-10 years increased from 42.6 to 82.7 per cent and in the age group of 11-24 from 12.7 to 36 per cent during the period of 24 years. Even at the end of Sixth Five Year Plan it has not been possible to achieve the complete enrolment of the children in the age group of 6-11. The most important pieces of legislation in the field of education have been the Primary Education Acts passed about 1961 in various States where such Acts were not already enforced. This enables the States to employ compulsion. The approach, however, has not been punitive, but one of providing schools to all children and persuading parents. Education is not yet a justiciable right, that is, no citizen can claim education from the State in a court of law.

Nutrition and Health

In the preamble of the Constitution of the World Health Organization, health has been defined as "a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity." Nutrition is the basis for the sustenance of life. It is difficult to enact any law in this respect. But through mid-day meal schemes and Integrated Child Development Scheme a lot could be done to improve the Nutritional Dwarfism amongst the children. The mid-day meal scheme of Tamil Nadu is a very big step to fill such a big step in the nutrition of children.

On July 1, 1982 the Tamil Nadu Government launched the Mid-day Nutritious Meal Scheme, a Rs. 150 million project which gives over 6.8 million underfed children in the State one square meal and 400 calories a day, through 52,000 centres including 31,000 schools. The scheme is laudable in a country where one-third of the children live below the poverty line; where about 50 to 60 million children suffer from malnutrition and at least 70 per cent of children from poor families suffer from growth retardation due to malnutritio[n] The Tamil Nadu scheme has boosted school enrolment by over 70 per cent, reduced truancy by over 80 per cent and the number

of drop-outs by over 90 per cent. A study made by the Gandhigram Rural Institute, Madurai based on a sample survey of 1,632 children in 12 feeding Centres found among other things, that Parents could go to work secure in the knowledge that their children would be fed and taught well, that 95 per cent of those interviewed felt that the food was of good quality, that when upper caste and Harijan children eat together communal harmoney receives a boost, and that attendance in schools has shot up from the usual 45 per cent to over 95 per cent.

The Andhra Pradesh inspired by Tamil Nadu experiment introduced the Mid-Day meal scheme as a fitting tribute on the 93rd birth anniversary of Pandit Jawaharlal Nehru. The scheme aims to cover 6 million children. The Tamil Nadu Government on this occasion has decided to provide children of the State with tooth powder. These efforts are excellent in the direction of improving the nutritional Status of the children.

Health laws are merely working tools with which health administration, not only protects the community from health hazards, but also implements schemes for improving the general health of the people and their physical well

being. It would indeed be ideal to have comprehensive Central Public Health Act for the entire country but with provision for such variation as may be demanded by varying conditions in different States. What we have actually are piecemeal enactments, often overlapping with one another, passed from time to time either by States or the Centre in response to immediate needs. It is gratifying to note that the new policy recently adopted by the Parliament aims in this direction. The new policy confirms the trend of restricting the health services emphasising community preventive and promotional health linked to a hierarchy of referral services and integrated with human development and poverty alleviation programmes.

The most important Acts pertaining to children are:

1. The Indian Penal Code 1860. The Act, one of the earliest in India, provides for inocculation and vaccination. Parents or guardians are required to take boys between the ages of six months and 14 years, and girls between the ages of six months and eight years, residing in any local area for vaccination.

Prevention of Food Adulteration Act has been in force since June 1955 with the objectives of providing pure

and wholesome food to the general public. The Act has undergone major amendments twice since 1954. The Act provides very deterrent punishments to convicted adulterators ranging from a minimum 6 months to life imprisonment, depending upon the gravity of the offence.

Registration of Births and Deaths Act, 1960: The head of the household or the nearest relative of such a head or the oldest adult male person in the house is required by this Act, as the case may be, to notify births and deaths either orally or in written within three days of the event. If birth or death takes place in institutions such as hospitals, health centres, maternity homes, etc., the medical officers in-charge or any person authorized on his behalf has to notify the appropriate authorities of these events.

Maternity Benefit Act, 1961 The Act prohibits the employment of women during six weeks immediately following the day of delivery or miscarriage and provides safeguards to the health of a pregnant woman against arduous work over a specified period. Woman workers under this Act are entitled to maternity benefit at the rate of average daily wage for the period of her actual absence, not exceeding six weeks preceding and following the delivery.

Legal Termination of Pregnancy Act, 1971 : The Act provides for termination of pregnancy by a registered medical practitioner if there is a risk to the physical or mental health of a pregnant woman, or if there is substantial risk that if a child was born it would suffer from physical or mental abnormality and would be seriously handicapped. Grave injury to mental health through pregnancy caused by rape has been accepted. Similarly, pregnancy occurring because of the failure of any contraceptive device or method used by any married couple with the purpose of limiting the number of children is presumed to constitute grave injury to the mental health of the woman. The procedure for carrying out abortion have considerably been simplified after the introduction of MTP Rules of 1975 in terms of approval of a place, certification of doctors, etc. There is little evidence in the research literature of the right of women to determine for themselves how many children they wish to have and when they want to have them. For many women requesting abortion, the right is often reduced for reasons related to socio-economic status, personal conviction of physicians, and the perceived mood of dominant society. The right to abortion is a fundamental human right, a moral choice a woman should be free to make without undue

restcictions imposed by a still largely male dominated society. India has launched national programmes for the conquest of communicable diseases, and for the improvement of nutrition. Once these two major problems are tackled the expectation of life and the general standards of health would be much higher.

Beggary and Vagrancy

An under-developed economy with low employment potential forces a large number of population to become beggars and vagrants.

Begging and vagrancy arouse social concern for three prominent reasons: (1) Fore-runners of criminal careers; (2) Against the aesthetic sense of the community; and (3) Looked upon as an affront to individual dignity and denial of social justice to handicapped and under-privileged classes. Special Acts have been passed by most of the States to prohibit beggary in public places. Under Section 11, any person who employs or causes any person to solicit or receive alms, or whoever having the custody, charge or care of a child, connives at or encourages the employment or the causing of a child or solicit, or receive alms, or

whoever uses another person as an exhibit for the purpose of begging, shall on conviction be punished with imprisonment for a term which may extend to three years but which shall not be less than one year .

Moving on: The case of Sitara of Delhi is very pathetic. Sitara is about eight years old. She is lame and blind of one eye completely shut.... Her parents were dead. Her brother had left her to the mercy of the streets. He wanted her to put in a lunatic asylum. But apparently he did not even do this. And so, incredibly, she has been fending for herself since then, not begging but subsisting on whatever is offered. Some one took her to the remand home at Ferozeshah Kotla and left her in the care of the authorities there to be later sent to the Nari Niketan, which has section for children also. Sitara represents only the proverbial tip of the ice-berg. There are countless children like her in the capital's streets.Practically no one gives them a second thought. Nor is their plight likely to improve if and when the government carried out its promise to ban begging and vagrancy by children.

There is no penal statute making juvenile vagrancy an offence. The Parliament in 1960 enacted the Children Act, 1960 with the object of providing for the care,

protection, maintenance, welfare, training, education and rehabilitation of inter alia, neglected children. A "neglected child" is defined to mean a child who (i) is found begging; or (ii) is found without having any home or any ostensible means of subsistence or is found destitute, whether he is an orphan or not; or (iii) has a parent or guardian who is unfit to exercise or does not exercise proper care and control over the child; or (iv) lives in a brothel or with a prostitute or frequently goes to any place used for the purpose of prostitution, or is found to associate with any prostitute or any other person who bears an immoral, drunken, or deprived life.

Competent authorities and institutions for neglected children are: (a) Child Welfare Boards, (b) Children's Home (c) Observation Homes, (d) Aftercare Organizations.

Action with respect to neglected children: (a) Taking charge of the child, (b) Inquiry by Board, (c) Commitment to Children's Home, (d) Commitment to suitable custody (Probation), and (e) Placing out on Licence (Parole).

The corrective and rehabilitative philosophy have become a corner stone of the modern penal philosophy. Some notable legislative measures which reflect the corrective philosophy are the Code of Criminal Procedure, the Probation

of Offenders Act, Prisons Act, Reformatory Schools and Children's Acts and Borstal Schools Acts. These Acts are too familiar to need any elaboration.

Sexual Offences

Sexual offences of various types are invariably associated with moral issues. However, the values of sexual behaviour and the situations under which it manifests largely determines the moral judgment about it. The Supreme Court's judgment in Major Singh V. State illustrates that upholding and protecting public morality is one significant function of various offences involving sexual behaviour. In this case the accused had sexually assaulted a seven and a half year old girl. The accused contended since the girl was not old enough to have a sense of her modesty, the offence under Section 354 Penal Code, requiring intentionally outraging the modesty of a girl was not made out. The court held the offence was fully made out, particularly in view of the public morality offending nature of the behaviour.

Section 375 of the Indian Penal Code defines rape, the most extreme instance of invasion of the bodily interest of a woman, which involves sexual intercourse with a woman

against her will and without her consent. Even a husband can be guilty of committing rape if he indulges in sexual intercourse without the consent or against the will, with his wife who is below fifteen years of age.

Legislation on Rape

It cannot be over emphasized that a legislation on rape need to be taken by our Parliament on priority basis precisely because of the social conditions that prevail. It is the victim more than the offender who is the sufferer. It is perhaps reflections of the general apathy too that, when the authorities invited communications on the subject through radio and newspapers from all over the country, only 123 letters were received. This was despite all the noise made by numerous organizations. Legalities of the matter apart, it is a matter of concern tha though custodial (The report of the joint committee of parliamentarians on the Criminal Law Amendment Bill concerning rape laws) rape has been given more attention, not more than a cursory glance has been cast at the rape of minors and physically and mentally disabled. (Prabha Dutt, The Hindustan Times, New Delhi, Monday Nov. 1982).

A study of Madhya Pradesh reports that cases involving Harijans have increased by 110 per cent and those of Adivasis by 171 per cent. The overall increase from 1974 to 1982 has registered a staggering figure of 94 per cent.

Prostitution

The basic Indian law relating to prostitution is contained in the Suppression of Women and Girls Act 1956, which is a Central legislation passed in pursuance of the International convention signed in 1950. In addition to this legislation, and the rules passed thereunder, certain provisions of the Indian Penal Code also have bearing on the subject of prostitution. All these legal measures aim at penalizing activities involving preparation, organization and actual carrying on of prostitution thereby hedging prostitution within strict limits laid down by the society from time to time. The Act provides for the setting up of "Protective Homes" and shelters at the State and district levels. The legislation seeks to curb commercialized vice. Women and girls rescued from brothels are to be sent to protective or corrective homes. The Act also provides for the setting up of non-official advisory bodies to assist special police officers, who, while making search of any premises, are required to be accompanied by two responsible persons of the locality, one of whom has to be a woman (Section 13-15).

In New Delhi, due to Government's strict laws against immoral traffic, the prostitutes left brothels and took to street walking. With the flourishing five-star hotels and jet-set establishments, the call girls (some from well-to-do families) carry on their business in the well lighted corridors. The famous Urdu short story writer Sadat Hasan Man - wrote in 1945, "Prostitution is a social necessity. Prostitutes are like municipal vans lifting garbage. If they did not do this civic services, the morals of our sisters and wives will be in danger."

The Suppression of Immoral Traffic Act, 1956, suffers from several loop holes, with the result that hardly any convictions take place except under section 8. The Act calls for a thorough revision.

The bill recently adopted by the Karnataka Assembly to end the Devadasi system prevalent in Northern Karnataka imposes deterrent penalties. Those who abet or practise it can be put behind bars for upto three years and must also pay a fine. While Devadasis - women who have been dedicated as children to the divine mothers' YELLAMMA - formerly came from relatively well off families, now they are drawn mainly from the ranks of Harijans. Almost half

the Harijan girls in this region are dedicated to the goddess and handed over to the temple because tradition dictates this must be done to earn divine blessings for the family. If this is not done the ill-luck will fall on the family.

To get rid of such superstitions the Karnataka government must launch an educational campaign in the handful of districts where the pernicious evil prevails. It is no secret that after a brief, futile attempt to follow the precepts of the Devadasi way of life, most of the girls end up in the urban red-light areas. One study showed that a third the prostitutes in Bombay's cheapest brothels were Devadasis, almost three quarters of these were 14 and under when they took to the profession. (The Times of India, November 30, 1982).

Regulating Foreign Funds

The large proportion of funding for voluntary action in India still comes from foreign sources, governmental, international and private. These funds are subject to regulation and control under the Foreign Contributions Act which places all activities thus funded in the public domain.

These foreign funds have been invaluable in setting up and sustaining a number of voluntary agencies and programmes and should not be unwelcomed in future either. But what is surprising and saddening is the relative even near total absence of corresponding Indian funding from private sources.

Even the People's Action for Development, India (PADI), a Government sponsored agency, which disburses an annual budget of about Rs. 40 million, is wholly dependent on foreign funds, its only Indian resource being the interest it earns on earlier accumulated funds. PADI certainly should not have to remain wholly dependent on foreign funding which is politically undesirable and ethically wrong.

Tax concessions would provide an added incentive to make contributions in amounts that quali:y for tax rebates. Otherwise , Government of the day must be convinced to allow such retables for genuine cause of children. The Government of Gujarat has proposed levy for a "Child Development Cess" on cinema ticket, air ticket and railway ticket etc., for generating enough resources for financing the nutritional and health programmes for children (The Economic Times, Vol. IX, No. 197, New Delhi, Sunday Oct. 10, 1982, p.8). The example of PADI (Maharashtra) is instructive.

Until 1975 it was completely dependent on the Parent PADI for funding. It then decided to raise funds on its own through charity shows and "a rupee fund campaign" under which every citizen of the State was sought to be persuaded to contribute a rupee a year. During the past three years PADI (Maharashtra) has succeeded in collecting Rs. 2.5 million through charity performance and Rs. 2.4 million through the "rupee fund campaign."

India is the largest single recipient of aid to voluntary agencies from donor agencies abroad. The quantum of such funding, has more than doubled in the last two decades and is steadily increasing. The Christian Children's Fund currently spends Rs 35 million annually. Its contribution could easily go up to Rs 48 million in the next five to six years. The agency has not yet even begun to look for sponsors in the country.

Conclusions

The law breakers are much more cleverer than the law makers. The former can find some or other loopholes in one law or other to meet their needs and violate it. However, all efforts must be made to educate public, prepare law

enforcing machinery and judiciary to be fearless. The Family as unit would be best to protect to tackle the problem of the children. The Social Science Research methods may be used in making some specific empirical studies to find out reasons for the ineffective implementation of Children Acts. The parents of children need to be provided legal aid so that necessary justice is meted to them.

The United Nations Declaration of the Rights of the Child, the constitutional provisions about the child care, and the National Policy for Children should not only remain pious intentions or hopes. These need to be translated into practice and reality. The child deserves all our attention to make him a supreme asset of the nation. There is no doubt the problems of children cannot be legislated away because its roots lie in extreme poverty. Meanwhile, our best human resources are being wasted away because of a situation of a "continuous drift". Even though children below 14 years constitute 42 per cent of the country's population they cannot make their voices heard; they cannot strike or mobilize MPs and MLAs. They do not represent vote banks, and so few political parties are interested in their plight. And yet they are our future - these children without a future.

It should, therefore, be clearly understood that mere promulgation and implementation of law through the government machinery, does not prove to be sufficient for effective change. This is much more true in the field of child welfare. Effectiveness of a law as instrument of change, seems to be dependent on various other variables such as : (1) the intensity of the felt-need for change among people whether induced or existing; (2) Existence or non-existence of threat for the basic group interest as a consequence of change; (3) Supportive aspect of change; (4) Commitment of the government; (5) Dissemination of law to the public; and (6) Public consensus. Law is better understood as a catalyst of change than a sole effector of change. Levin agreed that the ability of law to effect change is probabilistic, contingent and sequential.

The delayed justice is no justice as can be well imagined from the fact that nearly 10 million cases were pending in the Magisterial, Sessions, District and Subordinate courts at the end of 1981. (The Statesman, Wednesday Nov. 10, 1982). This would be the fate of Children Act, if special courts are not set up to try out cases falling under the domain of these Acts.

A perusal of reports from the region reveal that amid problems, what had been achieved so far was "truly astounding". But we have still to go a long way to achieve our goals in the midst of grinding poverty. The child must be properly cared for, loved for by the family, school, political and other institutions. An integration of all these three institutions in terms of parental, teachers and community leaders responsibilities towards the children would help us to take a march in the desirable direction and reaching the benefits to children. A setting up of unit for the Child Law would help to codify the laws, to draw a comprehensive Children Act and conduct empirical studies to plug loopholes in laws and to develop strategies for their implementation.

Let me end by citing an observation on Constitutional Law by Dr Rajendra Prasad and other distinguished constitution makers. He said "A Constitution is a lifeless thing. It acquires life because of men who control it and operate. If the people who are elected are capable and are men of character and integrity they would be able to make the best of even a defective constitution or law. If they are lacking in these qualities, no constitutional law can help the country".

Dr Ambedkar has something very pertinent to say. According to him "constitutional morality is not a natural sentiment. It has to be cultivated. We must realize that our people have yet to learn it. Democracy in India is only a top dressing on an Indian soil which is essentially undemocratic."

Jawaharlal Nehru who gave the Constitution of India spirit,soul, philosophy, and vision aptly remarked that Constitution will remain on paper or become useless and purposeless unless it is able to address itself to the problems of poor and the starving masses.

Vinoba Bhave echoing Gandhiji's sentiments said "we should be able to develop an independent Lok Shakti - power of the people which is free from coercive power of the state as opposed to the power of violence. Instead of depending on legislation enacted by a majority vote in Parliament or State legislations, our work should essentially rest on the service of the people and the power which is generated from such selfless service".

The child must be given his right as child rather than denying his childhood forcing him to take job in various places to feed himself and in most cases members of his family. Child has right to full development and as a

Constitution of obligation child-education should be given top priority in all our policies and programmes. The income of the deprived families should be such that they provide needs of children rather than use them to meet their requirements.

The universalisation of child education is dependent on following factors: (1) making down-trodden literate (2) eradicate illiteracy amongst masses specially of backward communities and tribes (3) improve the status of women and give them dignified equality (4) all efforts should be made to regenerate rural economy by providing work for all and also providing food for the hungry and needy all over world.

The education of girl is highly neglected because of male bias. For instance, despite the efforts made to increase the level of female literacy, which in 1981 was only 25 per cent, the drop-out rate of girl students continues to be high. This is evident from the fact that the enrolment of girls in higher education has not improved in the decade 1975-85.

Is it possible to take up cudgels on behalf of the tormented and threatened female population and make an attempt to invoke public condemnation against the male bias. Millions

of women who are subjected to mental and physical torture by their husbands and in-laws for not providing the legendry heir and for those unborn female foetuses that are being destroyed for the sake of male child. This position in India continues despite the fact that sex is determined by the father and not the mother. Another depressing fact is that 15 - 20 per cent of all natural deaths are a consequence of high level of anaemia in pregnant women. This speaks volumes about the status of women with the family which makes them the chief object of neglect from the time they are born.

One should lift oneself up by one's own efforts and should not degrade oneself, for one's own self is one's friend and one's ownself is one's enemy.

NATIONAL SYMPOSIUM

TITLE OF PAPER: PSYCHOLOGICAL STRATEGIES FOR THE EDUCATIONAL DEVELOPMENT OF SOCIALLY DISADVANTAGED GROUPS

N.Y.Reddy*

Amelioration of weaker sections in our society, of late, is receiving somewhat higher priority than what it used to be in the past. The state of Andhra Pradesh is in the fore front in spending amounts on the educational development of the Socially Disadvantaged children, particularly Scheduled Castes and Scheduled Tribes by way of creating hostel facilities and residential schools for them. It is not suprising to note that as many as 2,210 hostels and 64 residential schools exist as on today exclusively for S.C. students in the state. In addition to this students of +2 and degree level are provided with social welfare scholarships to reside in self managed hostels numbering 839. As many as 2,13,732 students reside in Social Welfare hostels. About 50,000 students at +2 and undergraduate level residing in self managed hostels derive benefits from the Social Welfare department. As much as 93.40 crores of rupees are spent on the educational facilities of the S.C. Students per year. Considering the fact that large amounts of money are being pumped into the educational facilities of S.C. and S.T. students, the gains on the educational front are not very much striking

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because of the low quality schooling, improper planning and inadequate living conditions in the hostels. At one point of time the Department of Education was very much worried for not getting trained graduates from Scheduled Castes in filling 200 teacher posts in mathematics and sciences that were reserved exclusively for Scheduled Caste candidiates. A peripheral survey revealed that S.C. students generally do not opt for mathematics or sciences as much as the students from general population opt for them. The Department of Social Welfare of Government of Andhra Pradesh prompted by the directorate of public instruction assigned an action research programme to the Department of Psychology, Osmania University in 1983 to find out reasons for low profile of the S.C. students in their studies, more particularly their performance in maths and sciences. The project is an on going programme since then the psychological evaluation has become a part and percel along with interventions in the shape of counselling and guidance for the students residing in Social Welfare hostels. Two studies that could throw light on the general mental ability and aptitudes and the desired effects of interventions on the class-room performance of the S.C. students are reported here, as they are considered to be important for suggesting psychological strategies.

Before the findings of these two studies are presented it is necessary to know about the social disadvantagedness in Indian context.

According to H.C.Lendren (1976) "socially disadvantaged children are those who grow up in various cultures or sub-cultures outside the middle-class culture. They make up a sizeable proportion of school population in most countries of the world. The common denomination that characterises these children is poverty, and the majority of them live in urban and rural slums".

If this definition is to be adopted for Indian society atleast 70 to 80 per cent of population, irrespective of their castes and creeds, can easily be described as the socially disadvantaged but that is not the case with our type of social disadvantagedness. In my view the social disadvantagedness in Indian context must fulfill two basic criteria:

1. Poverty
2. Deprivation of normal social interaction with the persons of mainstream, thus resulting in social isolation and cultural anomie.

If we keep these criteria in mind S.C. and S.T.s are the two main types of population that can be strictly described as socially disadvantaged. Untouchability practised by the caste Hindus from time immemorial is the main cause of disadvantagedness in the Harijans. Geographical isolation coupled with cultural deprivation is the root cause of social disadvantagedness among the tribals. By economic amelioration

alone we cannot bring them into the main-fold and, therefore, it is necessary to think of psychological strategies and social development programmes. The present paper mainly focuses on the psychological strategies by way of presenting the findings of two studies that were carried out in 1986 as a part of the Educational, Vocational Guidance and Training project at the Department of Psychology, Osmania University.

STUDY 1: A COMPARISON OF SCHEDULED CASTE CHILDREN WITH NON-SCHEDULED CASTES IN THEIR GENERAL MENTAL ABILITY AND APTITUDES

It may not be possible here to describe the study in great details because our focus is to work out psychological strategies based on the findings. To be brief the investigation was aimed at finding out the truth in the popular belief that students of lower socio-economic strata, particularly S.Cs. are inferior to those belonging to higher castes and classes in their General Mental Ability and Aptitudes more for the reasons of their low genetic endowment than impoverished environment. The racist psychologists like Jensen, Burks and others (Jensen, 1969; Burks, 1929; Shuey, 1958; Colemg et al. 1966) Ornstein,1965; claim that heredity is the determining factor of intelligence and Whites have higher I.Q. than Blacks. They found in their studies that there

was consistent differences of 15 I.Q. points in favour of Whites. Contrary to this view, Loehlin et al. (1973) point out that the observed average difference in the scores of members of different U.S. racial ethnic groups on intellectual ability tests probably reflect in part inadequacies and biases in the tests themselves. These psychologists, who are critical of the genetic position believe that:

1. Environmental differences have not been given sufficient weightage by Jensen and others who swear by the genetic position.
2. Special programmes for the disadvantaged have either been inadequate in scope or incorrectly assessed.
3. Not enough is known about the heredity mechanism in intelligence to conclude that Blacks are genetically inferior.
4. Nature of intelligence itself is not sufficiently well understood to permit valid racial comparisons on the basis of existing tests.

There are a few Indian studies (S.Chatterji, Manjula Mukherjee and S.N.Banerjee, 1972; Rangari A. and Palsane, M.N. 1982; though not exactly on the lines mentioned above, which point out that caste status of the individual is an

important factor in causing differences in the I.Q. of socially disadvantaged students and somewhat more advanced groups of the population. A study carried out by Rangari and Palsane, 1982; on 1197 students from seven senior colleges in Aurangabad, for instance has revealed that pronounced difference between the I.Q. of scheduled caste and Non-S.C. groups of students was mainly due to school achievement, the latter group obtaining higher scores on scholastic achievement tests. However, none of the Indian studies mentioned here, had gone into the basic dilemma of heredity Vs. environment in causing the differences in the innate abilities of students tested.

Hypothesis

The study commenced with the null hypothesis that there are no significant differences in General Mental Ability and Aptitudes of the S.Cs. and Non-S.Cs. However, there may be differences in their achievement school subjects.

Method

Psychological tests in Telugu that were specially developed for the purpose were employed for measuring different types of abilities of students like:

i) General Mental Ability (I.Q.)

ii) Scientific Knowledge

iii) Numerical Ability

iv) Mechanical Reasoning

v) Scholastic Achievement in Mathematics & Sciences

vi) Study skills

Tests employed in the study may be mentioned as follows:

a) Group test of General Mental Ability developed by K.Ravichandra*

b) Scientific knowledge & Aptitude test developed at EVGT Project Centre

c) Mechanical Reasoning Test (Adopted into Telugu from

d) Numerical Ability Test (Bennett's DAT battery

e) General Mathematics scholastic achievement test (Developed at EVGT Project

f) General Sciences scholastic achievement test (

g) Study Skills Inventory developed by P.V. Ramamurthy**

Sample:

The sample in the present investigation comprised students of IX and X classes of a number of schools in Andhra Pradesh. It consists of both S.C. and Non-S.C. categories with comparable school and living conditions. In a way they were

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controlled on all vital factors like age, sex and school grade except the caste and socio-economic status. The break-up of the sample varied from test to test as shown below:

Name of the test	Sample: No. of students in SC groups	Sample: No. of students in Non-SC group
1. General Mental Ability	1596	634
2. Numerical Ability test	1576	613
3. Mechanical Reasoning test	1578	433
4. Scientific Knowledge & Aptitude test	1588	586
5. General Maths	1587	460
6. General Science	1574	460
7. Study Habits	400	400

Procedure:

The research personnel of the E.V.G.T. Project visited the hostels and schools in a number of districts and taluk towns, and contacted the students personally in order to administer the tests. Full precautions were taken in establishing rapport with them. Testing was done in groups adhering to the instructions of each and every test.

The data were statistically analysed for the purpose of making comparisons between S.C. and Non-S.C. students.

Results & Discussion :

The data are presented in the following tables:

Table 1 Mean, S.D., S.E., and 't' value of scores of S.C. and Non-S.C. students on General Mental Ability.

	SC group N=1596 SE	Non-SC group N=634 SE
Mean	1977±0.16	20.11±0.22
S.D.	6.52	5.72
't'	1.15	

Table 2 Mean, S.D., S.E., and 't' value of scores of the S.C. and Non-S.C. students on Numerical Ability test(DAT)

	SC Group N=1576 SE	Non-SC Group N=613 SE
Mean	13.88±0.12	14.43±0.27
S.D.	5.03	6.78
't'	1.82	

Table 3 Mean, S.D., S.E., and 't' value of scores of S.C. and Non-S.C. students on Mechanical Reasoning test

	SC Group N=1578 SE	Non-SC Group N=433 SE
Mean	20.01±0.15	20.23±0.20
S.D.	6.09	4.24
't'	0.81	

Table 4 Mean, S.D., S.E., and 't' value of scores of S.C. and Non-S.C. students on Scientific Knolwedge & Aptitude test

	SC Group N=1588 SE	Non-SC Group N=586 SE
Mean	16.46±0.17	17.12±0.32
S.D.	6.87	7.91
't'	1.78	

Table 5 Mean, S.D., S.E., and 't' value of scores of S.C. and Non-S.C. students on General Maths test

	SC Group N=1587 SE	Non-SC Group N=460 SE
Mean	15.33±0.13	19.25±0.28
S.D.	5.32	6.75
't'	11.49**	

Table 6 Mean, S.D., S.E., and 't' value of scores of S.C. and Non-S.C. students on General Science test.

	SC Group N=1574 SE	Non-SC Group N=460 SE
Mean	20.56+0.20	24.92+0.31
S.D.	8.20	6.72
	11.78**	

** Please see overleaf.

** 't' ratios that are significant beyond 0.01 level.

It is evident from the first four tables showing the comparative profiles of the SC and Non-SC students on innate abilities like I.Q. and aptitudes, that there are no significant differences between the two groups of students. However, pronounced differences can be noted between them in scholastic achievement in subjects like Maths and Sciences (see tables 5 & 6). Item-wise frequencies were computed for the responses of SC and Non-SC students separately on Study Skill Inventory. Chi-square values were computed between the problem and non-problem responses for each group following the 2 x 2 fold contingency procedure and are shown in table below:

Table 7 Chi-squares showing the difference between the frequencies of problems of study skills between SC and [illegible]

Areas of study habits	S.No. of Item in the Study habit scale	Frequency of problems and Non-problems				Chi-square value
		S.C.		Non-S.C.		
		Yes	No	Yes	No	
1	2	3		4		5
I. Reading & writing comprehension	1	226	174	220	180	0.09
	2	145	255	135	265	0.027
	3	281	119	131	269	5.60**
	4	123	277	94	306	2.65
II. Concentration	5	130	270	288	118	0.57
	6	88	312	137	263	1.42
	7	311	89	164	336	100.08**
	8	145	255	254	146	2[illegible].70
III. Time budgeting	9	285	115	239	161	5.85**
	10	123	277	164	236	[illegible].56**
	11	[illegible]	94	254	146	[illegible].01
	12	200	200	150	250	0.06
IV. Exam taking behaviour	13	167	233	154	246	0.45
	14	170	230	146	254	15.06
	15	120	280	120	280	[illegible]
	16	218	182	211	189	1.23
	17	223	177	217	183	0.0[illegible]
V. Miscellaneous	18	225	145	246	154	[illegible].21
	19	163	137	242	158	0.02
	20	174	226	183	217	0.20
	21	150	250	140	260	0.27
	22	128	272	110	[illegible]	0.24
	23	204	196	178	222	1.69
	24	224	176	190	210	2.89
	25	105	295	56	[illegible]	5.97*

** Chi-square significant at 0.01 level.

It is clear from the Chi-squares of the above table that the SC group differed significantly from Non-SCs on the five items of study skills thus showing a greater amount of problem behaviour. However, non-SCs too have shown pronounced problems on two items dealing with concentration and time budgeting. These study skills centred around all five areas viz., 1. Reading and writing comprehension, 2. Concentration, 3.Time budgeting. 4. Exam, taking behaviour and 5. Miscellaneous. Area-wise analysis reveals that the SC students suffered from more problems in reading and writing comprehension, and exam taking behaviour. The findings suggest that the SC students lacked in class room note taking home work and preparation for the exams.

The results of the study confirm our hypothesis that there are no differences in the innate abilities of the students irrespective of the caste and social status. The differences in scholastic achivement and study skills may be attributed to the following reasons:

1. The low rate of exposure of schooling and other social stimuli in early stages of socialisation of the children before they come to IX and X classes. Perhaps the students of general category because of the added facilities might have been exposed to better schools, more enriched social interactions and better home conditions.

2. The hostels where SC students reside may not be providing the type of stimulating academic climate which is available to the general category of students who attend the schools from their homes.

3. Faulty study habits and learning methods.

4. Lack of proper supervision on their studies.

5. Inadequate encouragement from the parents.

Having established the fact that the S.C. students do not differ from non-S.C. students in their I.Q. and aptitudes but only differ in their class-room performance and study habits, it became necessary to carry out a study to find out effect of interventions on their performance in subjects like maths and sciences.

STUDY 2: THE EFFECT OF INTERVENTIONS ON CLASS-ROOM PERFORMANCE

Once we know that social disadvantagedness does not impair the innate abilities and other intellectual faculties of children, it is necessary to plan the strategies of interventions which can really improve their academic performance in the class-room. The interventions can be of several types; academic like special coaching, supplementary reading materials, strengthening of teacher-pupil interaction in the class-room etc., and the non academic could be motivation enrichment of attitudes towards studies and gearing up the study skills. In study two, because of certain constraints, we confined our programme of interventions to special coaching and exposure of the students to improve study methods only.

Several investigationx on study skills in the past (Wittenborn et al, 1945; Carter, 1950; Jamuar, 1958; Krishnan, 1956) have demonstrated that the students' exposure to improved methods of study habits would certainly accelarate their performance in the class-room.

RESEARCH DESIGN

Pre and post test control design with two experimental groups and one control group of subjects was adopted to find out the effect of interventions on the performance of students in maths and science. To describe it further experimental group I consisting of 32 subjects was exposed to special tutorials and training in study skills for a period of six months. Experimental group II comprising of 32 students was exposed to only tutorials; and the group III consisting of 32 subjects was not exposed to any of the interventions because this was treated as a control group. All the subjects in the above three groups were S.Cs. and were drawn from the same hostel. They were matched on factors like age, parental Socio-economic status and school grade. Since they were all boys there was no question of matching on sex.

RESULTS AND DISCUSSION

TABLE I: SHOWING MEAN VALUES ON GAIN SCORES

	N	Science	Maths
Experimental group I	32	2.12	2.22
Experimental group II	32	1.43	1.68
Control group	32	0.56	0.68

TABLE II: SUMMARY TABLE OF TUCKEY'S HSD VALUES FOR SCIENCE

	Study skills and tutor	Only tutor	Control group
Study skills and tutor	----	34.5	78
Only tutor	----	----	43
Control group	----	----	----

$F(2,93)=9.42$

TABLE III: SUMMARY TABLE OF TUCKEY'S HSD VALUES FOR MATHEMATICS

	Study Skills and tutor	Only tutor	Control group
Study Skills and tutor	----	27	77
Only tutor	----	----	50
Control group	----	----	----

$F=(2,93)=12.16$

F test was performed on gain scores in Science. F (2,93) =9.42, Mss=2.07 was obtained. This F ratio is highly significant. Tuckey's HSD test was performed on mean of gain scores. Group I which was exposed to training in study skills and remedial tutoring in science performed significantly better than experimental group II, which was exposed to only remedial tutoring. Experimental group I differed significantly with the control group which was not exposed to any kind of treatment. The experimental group II differed significantly than the control group in terms of their gain scores in science. These results also suggested that in comparison to the performance of experimental group II, the performance of experimental group I performed significantly better. These results suggested that imparting study skills in combination with tutor may create a better effect in enhancing the performance of the students in science compared to a group which has been provided only the tutor. The group which has not been exposed to any treatment (i.e., neither study skills nor remedial tutoring) performed very poorly. On the basis of these results we can conclude that imparting study skills in combination with remedial tutorial will enhance performance of students in their school subjects. Similar results were noted regarding the students' performance in maths (Vide: table III).

As can be seen from this experiment, imparting study skills has resulted in the improvement in gain scores both in science and maths. The results of the present study indicate that the group which has been provided with a tutor has performed better than the students in the control group condition where students were not provided either study skills or tutor. This study established beyond reasonable doubt that imparting study skills and providing remedial tutoring will improve the performance of the students in their academic attainment.

IMPLICATION OF THE FINDINGS IN PLANNING PSYCHOLOGICAL STRATEGIES FOR EDUCATIONAL DEVELOPMENT OF SOCIALLY DISADVANTAGED

It is heartening to note that despite adverse living and schooling conditions and earlier deprivations in socialization the S.C. students in our investigation have shown no significant differences in their General Mental Ability and Aptitudes in comparison to the students from general population. However, they were very poor in their performance in school subjects like maths and sciences. This only shows that they do not lack in abilities but they certainly lag behind the non S.Cs in scholastic achievement. The reasons for educational backwardness in the socially disadvantaged children as pointed out by Newton S. Mettfessel and J.T. Foster, 1965 are:

1. Lack of awareness of the 'Ground rules' for success in school setting.

2. Inability to make simple symbolic interpretations.

3. Short attention span in the disadvantaged children resulting in difficulty in following directions in the class-room.

4. Inflexibility in language usage.

5. Difficulty in developing size concept and number concept.

6. Difficulty in perceiving adults as people to whom they can turn for help.

7. Low level of curiosity about things.

8. Narrow range of experiences because of low level of interaction with children from other socio-economic strata.

Over and above the reasons mentioned here, it is generally observed that the socially disadvantaged children are likely to feel isolated from middle class culture represented by the teacher and school and, therefore, their need to belong is undiminished. It is not surprising to note that need affiliation is greater in them than need achievement. Further, the experiments on creative thinking in socially disadvantaged children (Roger A. Jhonson, 1975) have demonstrated that rewards produce better results in them as compared to middle class children and thattoo material rewards were found to be more effective with them.

In the light of the findings of several studies including our own on the socially disadvantaged children the following psychological strategies for their educational development may be considered:

1. Since home is the single most important factor that can make or mar the personality of a child in early stages of development; steps must be taken to enrich the home conditions of the disadvantaged.

2. Exclusive hostel system for one caste or community will do more harm than good and, therefore, it is necessary for the government to create mixed hostels by admitting students from different castes and classes. This will certainly ensure the integration of the socially disadvantaged with the main stream.

3. Building up ego strength in the disadvantaged children is the primary and essential step to be taken up by the hostel warden as well as the class-room teacher. This will pave way for developing high self esteem and self confidence in the children. This can be achieved mostly by rewards and recognition and not by punishment.

4. Several studies have proved that immediate rewards are better than delayed rewards for effective learning in the children and more so in the case of deprived children.

5. Since the socially disadvantaged children posses more n-affiliation than n-achievement, it is necessary to have judicious combination of these two in making the class-room teaching more interesting and effective.

6. Our studies and experience reveal that the S C students require a good deal of personal and individual attention in grasping concepts, and therefore, it is necessary to have special tutorial system in the social welfare hostels, particularly in difficult subjects like Maths and science.

7. A great majority of problems lie in faulty study habits and, therefore, it is necessary to expose the children to effective study skills by conducting short-term workshops for them.

8. Supplementary reading material in the form of special packages with lucid explanation of concepts and problems must be provided to the children which can be of use in outside class-room hours.

9. The most important element in teaching-learning paradigm is teacher and, therefore, it is necessary to train the teacher in changing his conservative attitudes towards the low caste children. This can be done through short term workshops.

On the whole more than the class-room it is outside class-room intervention that goes a long way in making the socially disadvantaged child an effective learner.

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NATIONAL SYMPOSIUM

TITLE OF PAPER: CHILD-CENTRED EDUCATION IN REMOTE, DISADVANTAGED AREAS : A MICRO ANALYSIS

Dr. R.P. Singhal*

The Irony

It may appear to be ironical that we are talking of child-centred education in a society where the child is deprived of even the basic necessities like food, clothing, shelter and health. It may also appear to be a contradiction that we are talking of a unified national curriculum when a large segment of children live in remote, disadvantaged areas where the life is much different than what normally exists elsewhere and where the needs of the child demand curriculum and teaching-learning processes which are relevant to the local, regional context. In fact, it is in these circumstances that we need child-centred education the most than where the child belongs to a well-to-do home, has access to a well equipped school and has an environment which is conducive to learning.

Micro Situations

It is quite understandable as to what kind of response there would be from the child as well as the parent to education in districts like Jaisalmer and Barmer in Rajasthan where the

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overall literacy rate is below 15% and the literacy rate among females is even less than 5%, rural female literacy rate being even less than 2%. In these districts, nearly half the females marry between the age of 15 to 19 and the gross irrigated area is not even 2%. Smaller the village, poorer is the performance in literacy. About 20% of population in Barmer and 4% in Jaisalmer do not have a primary school within a radius of 2 kms from their residence. Nearly one-fourth of the teachers in primary schools are untrained (Nuna, 1988). In this kind of social milieu that exists in backward and desert areas, it is very rare that teachers are able to pay that attention to the children which they deserve.

In Ladakh in J & K, we observe similar inequality and deprivation among the inhabitants. About 68% of the land area of Ladakh lies above 5000 metres from the sea level. For about six months, the mean temperature in Ladakh remains below critical level required for plant growth. During winter, temperature falls as low as minus 25°C. Economically, it is one of the most backward districts of the country. Electrification is confined only to Leh. Literacy rate is only about 12%, female literacy rate being still more dismal. Only 60% of boys and 43% of girls are enrolled in primary classes. 50% of the children drop out by the time they reach class V. Situation in rural areas is much worse. One of the habitations does not have any school within 45 kms, another does not have it within 30 kms. Most schools are single teacher schools. There are a number of incentives for children.

But there is paucity of educated persons to man the teaching posts (Premi, 1988). Although the teacher pupil ratio in Ladakh is very low (1:17 at primary, 1:14 at middle and 1:10 at secondary level), yet the achievement is disappointing. What kind of child-centred education exists in such a situation where of the total 161 primary schools, 122 have no library books, another 25 have less than 50 books and only 14 schools have more than 50 books ?

Dismal State

In Koraput district of Orissa, where more than half the population (55%) consists of Scheduled Tribes and nearly 14% of Scheduled Castes, the literacy rate among rural women is only about 5%. Of the 26 tribes in the district, the overall literacy rate is the lowest among the Bonda, Madia, Amanatya, Gadaba and Bhumia tribes. It is as low as 3%. The gross enrolment ratio of children of 6 to 11 in the district is only about 58%. As the economy is based on shifting cultivation, children assist the household in a significant way, resulting in high rate of withdrawal and wastage in schools (Anjana Mangalagiri and Nanda, 1988). The researchers have also observed that it is often suggested that the traditional games, riddles, tales, songs, dances and practices be incorporated into the curriculum of the school so that the children feel at home, but is it possible to marry the tribal codes to the present curriculum which is a pre-deter determined one?. According to them, even the Ashram schools specially set up for the tribal children have failed to

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translate the philosophy into practice.

Arunachal Pradesh, another remote area in the north-east, seems to have awakened from slumber only recently when it got the Statehood. It is now added to the list of educationally backward States in India. According to a study (Sujatha, 1988), only 39% teachers of elementary schools are trained. The drop out rate among students is very high.

The above story is true of practically all the isolated, disadvantaged areas in the country whether they are in Sikkim or on high hills in U.P. or whether they are in backward tribal regions of Andhra Pradesh or of Dadra and Nagar Haveli. In ultimate analysis, it is the child who gets neglected. He is not at all in the centre-stage.

Teaching Techniques

Most schools in such areas are small in size. A large proportion of them consists of single-teacher schools where the teacher is required to handle multi-classes at the same time. The challenge before the teachers in schools located in remote, disadvantaged areas is, therefore, quite formidable. It is the teaching techniques which are adopted by the teachers that become important in these circumstances. These techniques include good presentation of the lesson by them maximum use of teaching aids in order to bring clarity and to create interest of students in studies, use of innovative methods in teaching and making the teaching-learning relevant to the needs of the students.

This is particularly necessary for primary classes where sustaining interest of the students in studies assumes great importance.

The teacher is, thus, the key figure in teaching-learning process. It is the teacher who can, by his innovative ways, make the class lively, pay the required attention to the pupils and win their confidence. For him the pupil has to be the central point. Everything, whether it is his lesson, or his teaching aid or his testing device, all of them have to be such as to suit the needs and interests of the pupil.

Effective Factors

In an all-India study (Singhal, 1988), perceptions of teachers of 342 primary schools including single teacher schools were obtained about certain effective factors for pupil learning. Of these schools, 71% schools were rural. The following table gives the responses of teachers :

Table 1

Perception of Teachers About Certain Effective Factors for Pulil Learning (at primary stage)

		Most effective	Somewhat effective	Not effective
1		2	3	4
Good presentation and description of the lesson by the teacher	R	89	27	108
	U	48	6	45
	T	8	1	10
Maximum use of teaching aids to bring clarity and to create interest towards studies	R	72	42	110
	U	34	21	44
	T	6	3	10

1		2	3	4
Attention capturing ability of the teacher	R	75	37	112
	U	35	18	46
	T	8	1	10
Introduction of novel and unique ideas in teaching	R	58	51	115
	U	25	24	50
	T	5	4	10
Checking recapitulating capacity of students from time to time	R	63	47	114
	U	32	20	47
	T	5	4	10
Adequacy, relevance and correctness in the content taught	R	50	55	119
	U	29	23	47
	T	4	5	10

R = Rural; U = Urban; T = Tribal

It is a pity that a sizable proportion of teachers do not consider their attention capturing ability as instrumental in making pupil learning effective. It is only through their orientation to the new methods of teaching that they can realise the role, importance and effectiveness of their ability. In fact, teaching aids, new technology; relating education to environment etc. would not only be beneficial to pupils but would also make teachers' own task easier and interesting.

Table 2 proves this point because practically all the primary school teachers do say that maximum use of blackboards; for instance, is very useful for better teaching-learning. Similarly, use of charts and pictures, blocks and models, and visits to neighbouring places of interests are very useful devices for making the teaching-learning effective.

Table 2

Opinion of Teachers About Usefulness of Various Teaching Devices in Primary Schools Including Single Teacher Schools

		For classes I-III			For class IV - V		
		Very Useful	Vseful	Not Useful	Very useful	Useful	Not useful
Use of blackboard	R	195	19	10	183	23	13
	U	83	8	8	87	3	9
	T	13	2	4	10	1	8
Using charts & pictures for concept formation	R	156	60	8	159	45	20
	U	65	25	9	64	25	10
	T	10	5	4	9	2	8
Using science charts for children with science apparatus	R	99	100	25	115	75	34
	U	42	38	19	44	38	17
	T	6	5	8	8	3	8
Taking children to other schools and sharing the actual apparatus and machines	R	72	116	36	82	98	14
	U	27	48	24	31	47	21
	T	4	8	7	7	3	9
Using charts of original colour to bring to students the idea of colours	R	122	79	28	120	72	32
	U	49	35	15	55	30	14
	T	5	10	4	7	4	8
Taking students outside and giving the idea of colour through beauties of nature	R	132	72	20	126	67	31
	U	55	30	14	62	25	12
	T	6	8	5	7	3	9
Simple display of blocks and models	R	126	67	31	126	60	38
	U	59	23	17	57	25	17
	T	8	5	6	7	3	9

Added Handicap

The already disadvantage children have an added handicap because it is seldom that they could get text books in time (if at all, arrangements are made to get them in adequate number). Moreover, good, competent teachers do not readily make themselves available to go to remote, disadvantaged areas for there are hardly any facilities for their own residence and for proper education of their own children.

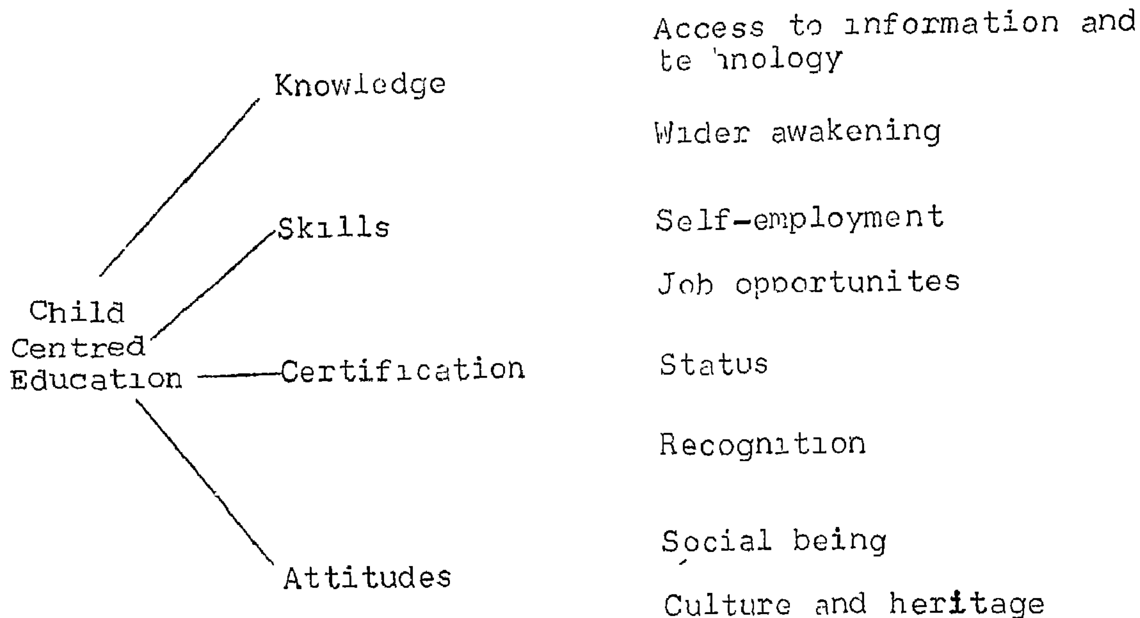
The quality of the books and instructional materials is another serious problem. Few writers have studied deeply the intricacies and immaturity of the mind of the child. The writers do exhibit the level of knowledge that is required of the subject of a particular text book, be it science, social studies or language. But the constraint is in knowing enough of the way in which children think and learn of the limited vocabulary available for communication between book and student (Unesco-Unicef,,1984).

Child Development

The child-centred education will undoubtedly have an immense impact upon the child in making him/her a person who is well equipped with the required knowledge, skills and attitudes as shown in the following figure:

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Child-Centred Education and Child Development



Cochrane (1979) has done a review of studies of the impact of education on individual in about twenty developing countries. Different kinds of relationship emerges e.g. education and fertility, education and family size. etc. Whereas there are always some other intervening factors which establish a particular relationship of education with a phenomenon, the above diagram would reflect a broad development of the personality of the child. More the education is child-centred; more sharp will be the development of the child from the point of view of quality, efficiency and relevance.

Integrated Approach

In addition to the appropriate techniques of teaching-learning to be adopted by the teacher or which he should receive proper pre-service and inservice training; availability

of suitable text books and that too on time, and taking other measures which are required to remove the handicaps of the children located in remote, disadvantaged areas, what is also required is an integrated approach to education. The factors which affect child development, e.g. health, food and nutrition, family status and social and cultural environment, must be closely linked with educational development. Education cannot really function in isolation. Accordingly, there should be a close integration of education with programmes of child health, child feeding and nutrition, early child care, adult education, community education, rural development, tribal development and the like.

The child-centred education in the particular context of isolated and disadvantaged areas has to be a holistic concept and if an integrated approach is adopted, it will have a greater impact on the development of the child.

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NATIONAL SYMPOSIUM

TITLE OF THE PAPER. DEVELOPMENT OF ENTREPRENEURSHIP AMONG SCHOOL CHILDREN - ROLE OF GUIDANCE & COUNSELLING.

Dr. J.S. Gaur*

INTRODUCTION

The answer to some of the grave problems that the country faces today lies in the desired upbringing of our children. There is an immense problem of educated unemployed in the country. Eminent economists and planners feel perplexed to think of ways and means to resolve this vital issue.

Tremendous efforts to procure job opportunities for young people have been made in the past. However, the magnitude of unemployment had been so large that most of these efforts have fallen short of it.

After a lot of serious rambling with ideas to be able to do something significant to find suitable strategies to combat this [illegible] of unemployment, development of entrepreneuiship amongst individuals from childhood onward looks to be an appropriate answer.

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Development of Entrepreneurship - A Challange to the Nation:

It has been rightly recognised that the human resource is the greatest asset for an industrial society. The need of the hour is to develop such individuals who could hearld change in the social and economic structure of our society.

The problem is how to get ahead with the task of developing the available human resource so that they become capable of taking their roles studded with dynamism, ability, competence and alertness to change the social and economic order.

It is therefore visualised that if our system of education could carve out entrepreneurs who become thorough in the activities of production, sales and sefvices, we may be able to create a much happier society.

The task is no doubt difficult but not formidable. It can be achieved only through evolutionary rather than revolutionary actions. It is authenticated now on the basis of research done in the area of vocational development in India as well as elsewhere.

Education can be used as an effective method to bring about the desired social change in any society. Development of a desired type of human resource can be achieved by bringing out the necessary changes in the prevailing system of education.

Introduction of Guidance and Counselling at the school stage in our present educational system can be a step in this direction. It can not only help pupils in the better development of their personalities but can also enlighten them towards the social need of adopting entrepreneurship as a career. Trained guidance workers coupled with tried out programmes and other research based information can significantly contribute towards improving the motivational level of pupils towards entrepreneurship.

Ways and means suggested in the Programme of Action for the National Policy of Education (1986) in Chapter Four clearly states : Vocationalisation of Education under the heading Pre-requisites, Priorition and Guiding Principles, Vocational Education Programmes suggests that : 'Entrepreneurial Self-Employment skills will be developed in Vocational Stream Students through curriculum, Special Training programmes as well as paid apprenticeship facilities'.

'State Departments of Vocational Education and State Council of Vocational Education will formulate necessary schemes for this purpose. State Departments of Vocational Education will set up career Guidance cells at district level. NCERT/ Central Institute of Vocational Education shall formulate suitable norms for the purpose'.

POA In chapter Eight on "Technical and Management Education mentions about Entrepreneurship Development as given below : 'Bringing about a positive attitudinal change among students towards self-employment and equipping them with relevant skills in this regard, is assuming increasing importance. However, a meaningful impact in this regard has yet to be made'.

POA further mentions within this Chapter under heading of "Entrepreneurship Development" that 'Indian Institutes of Management, university departments of management and other technical,institutions will undertake research studies and constitute study groups to document Indian experience in the non-corporate and unorganised sectors. Such studies would be widely disseminated to provide the basis for planning of management education in these sectors. The All India Board for Management Studies would formulate suitable schemes for this purpose in consultation with professional societies.

We are all aware that today's children are tomorrow's adult citizens. Formal Education can serve as an useful tool to shape their personalities, to help them realize their potentialities, increase their capacities and thereby help them to blossom into a realistic, forward looking and enterprising youngmen and women of future India.

Introduction of vocational guidance at +2 school level is a step forward in this direction. It helps students in acquiring knowledge about the world of work. The major task of the school counsellor is to provide them with encapsuled information about the various kinds of avenues open to them; make each of them aware of the unique pattern of their abilities, aptitudes, intelligence, values and potentials. This will help in improving the decision making quality of an individual and also expose him to the opportunities for making better choices.

This ambitious goal is difficult to achieve on a large scale, without the active involvement of teachers and parents because of their close and intensive contact with students. Their role as value determining agents is also important.

However, the selection of a right vocational course and passing it successfully is not the end of the road. We are well aware that number of available hands is much more than the number of jobs. Can today's parents, teachers, counsellors and others concerned afford to watch the budding youth losing their self confidence and grow into frustrated individuals.

One possible solution is to motivate enterprising school students towards self employment, both in short as well as long term perspectives. Let them become the creator of jobs instead of standing in the long queue of educated unemployed youths.

SHORT TERM MEASURES FOR THE DEVELOPMENT OF ENTPRENEURSHIP:

School Guidance Services vis-a-vis Self Employment :

School guidance services which are in vogue now in the country for the last few decades can be utilised successfully to motivate school students towards self-employment. There are about fortyfive thousand lower and senior secondary schools in the country. According to some surveys conducted a few years ago about five thousand of them had educational and vocational guidance programmes of some kind or the other.

In view of the facts and figures mentioned in the aforesaid para and the government policy in favour of diverting a significant number of our school youths towards self-employment, some of the following suggestions may be considered :

New orientation to the syllabus for the training of career masters by the State Bureaus of Guidance.

Present course of career masters seeks to impart training in a general way regarding the sources and methods of collecting, classifying, filing, indexing and utilising occupational information in guidance. However, in the context of promoting self-employment it will be advisable to conduct community occupational surveys and to use such information in promoting self employment.

Career masters and guidance workers can play a very useful role by way of identifying pupils with personality traits like high need achievement, positive motivation for entreprenurship, desirable intelligence required to go in for self employment. Career masters can benefit such children by informing them about current Govt. Schemes for promoting self employment.

It will be advisable to involve not only school children but their parents, and teachers as well in order to apprise them with such available opportunities.

The nature of information which is likely to become available to guidance workers may be of a varied type e.g. the raw materials, technical know how, credit and other facilities, marketing and overall feasibility of self employment in different geographical areas.

Career masters may also be in a position to gain knowledg about the positive and negative forces which proper pupils to venture for self employment.

Quite a good number of trained Guidance Counsellors, trained teacher counsellors and career masters (about 5000) are already working in several districts of the country. The only thing needed is to locate and coordinate their efforts for motivating school pupils to go in for self employment.

The school drop-out rate of children from secondary and senior secondary schools is quite high. Some of the drop-outs could easily be motivated to take up self employment provided they are properly trained and are ensured work of their interest suiting to their abilities and needs.

Trainability has been described as a function of the trainee's ability and motivation (Wexley and Latham, 1981). It has been pointed out that individual expectancy concerning any training programme were related to performance and behaviour change (Froman, L.,1977; Moitra,s.1976).

Motivation for Self-employment :

The District Manpower Planning and Employment Generation Councils which exist in all districts may ensure that trained career masters become available in all schools as early as possible. Such type of trained workers could either be located working somewhere in the district as subject teachers or may be got trained easily with the help of State Bureaus of Guidance. Slight change in the present career masters training programme may have to be done by providing short orientation courses to them including some topics in their course to emphasise the need and importance of self-employment opportunities.

District Manpower Planning & Employment Generation Councils in all districts should see to that, in collaboration with District Employment Exbhanges, Departments of Industries and Development and Agriculture Department, as to what are the possibilities of generating self-employment opportunities for school leavers in view of the available resources in terms of raw materials, technical know-how, credit facilities, and marketing possibilities in their areas.

Group guidance programmes for children could be organised in schools to publicise the aforesaid facts, figures and relevant information for setting up rural industries, village crafts, export centres and other entrepreneurship activities suited to the local needs of a particular area.

The aforesaid group guidance programmes could be organised by way of delivering talks, career exhibitions, film strips and film shows, etc. These could be supplemented by organising certain field-trips and plant-tours of children to places in the vicinity where people are gainfully self-employed.

Group orientation to promote entrepreneurship with parent-teacher associations is also desirable. Thus, a positive public opinion will have to be built-up in favour of the self-employed persons. An effort of this nature can go a long way in easily motivating youths for planning their career persuit in this direction.

Group guidance programmes for children should also be followed up with individual interviews where the career masters/ school guidance workers in the school may evaluate his/her thinking in this direction and give further detailed information to those children who need additional support to develop their career plans as entrepreneurs.

Specialised agencies responsible for the development of various small industries viz: Development Department, Small Industries Development Organisations. Khadi and Village Industrie Commission, Handloom and Handicrafts Development Board, Sericulture and Coir Boards, etc., may also be involved in giving useful and interesting information to school children in order that they may pick and choose from such utilitarian schemes.

Besides this, there are schemes like Integrated Rural Development Programme (IRDP) aimed at developing comprehensive projects based on microplanning at the Block level for bringing individual families above poverty line, mobilise institutional credit, organise training courses etc. The programme covers every viable economic activity in which the selected beneficiaries have an interest. Agriculture, Animal Husbandary, Fisheries, Rural and Cottage Industries Commercial and Service activities, etc. are eligible for the aforesaid purpose under this programme. Since 1980 this programme has been extended to cover the entire country. This programme is implemented at the District level by the District Rural Development Agency (DRDA). There is

need to reorient our school guidance service personnel regarding the schemes of the aforesaid kind as also the National Programme for the Training of Rural Youth for Self-Employment (TRYSEM). Thus, they may be able to help the rural children in planning self-employment ventures right from the very beginning. There is no dearth of schemes which are available now for school leaving children which if brought to their notice well in time may attract their attention and motivate them in taking up self-employment.

LONG TERM MEASURES FOR THE DEVELOPMENT OF ENTREPRENEURSHIP:

Motivation of children for Self-Employment in Long Term Perspective :

Mc Clelland (1961) points out that there is a built-in mechanism which tends to bias occupational choice towards business among boys of middle class status with high need-achievement. Veroff et al (1960) also arrived at similar conclusion regarding achieving imagery scores in the national survey of motivation on a random U.S. sample. Mehta,P (1965) in a study taken up at N.C.E.R.T., New Delhi also noted a high correlation between need-achievement and social class.

Thus, there is need to identify children in our school population who belong to middle class status but are high in their need-achievement.

Further, Hagen (1958,1961) puts forward that it is in the disadvantaged minority group individuals that there are

comparatively more chances of locating children with high need-achievement. The aforesaid study goes on further to establish that it is from those groups that business leadership has generally emerged e.g. the Dissentors in England, the Protestants in France, the samurair in Jews spread in many countries and the Parsees in India.

Such children who are high in need-achievement level, belonging to middle class social status and the disadvantaged minority groups could be easily identified and with a little effort could be guided in for self-employment persuits.

Researchers indicate that amount of achievement motivation which could be generated will mainly depend upon its initial level as also the degree of challenge accepted by the individual. An important variable for entrepreneurship happens to be locus of control, (Raizada) (1985).

One other important characteristic of persons engaged in managing business is their other-directedneds. Their behaviour is more oriented towards others.

Child rearing practices in different nations have been studied and studies of Mc Clelland (1952) and Winterbottom (1958) have shown that some significant practices marked with inculcating early independence, self-reliance and lesser restrictions on the part of mothers contribute, towards high

need - achievement. Even later work on a larger group of cultures by Child, Starm and Veroff (1958) revealed that in a sample of 33 cultures, positive training for achievement is associated with need-achievement in folk-tales. On the basis of research with need-achievement in folk-tales: What is desirable is a stress on meeting certain achievement standards somewhere between the ages of six and eight, neither too early for the boys abilities nor too late for him to internalise those standards as his own.

Parent-Child interaction is also another important dimension in effecting the need-achievement of children. Its dimensions have been studied by Rosen & Andrade (1959). Parents of high need-achievement children show their greater emotional involvement in his success. Besides this, mothers of the high need-achievement children also show more authoritarianism and they showed more warmth. Fathers on the contrary show less dominating behaviours.

Fraser (1961) in his study conducted in rural India concludes that fathers engaged in the production and sale of commodities would have higher need-achievement than those engaged exclusively in traditional agriculture.

Besides this, there are a number of other factors which have been identified as related to need-achievement level of individuals. There is need to utilise the available information suited to the diversities of our sub-continent based on studies already conducted which can influence the raising of need-achievement level vis-a-vis entrepreneurship in our children who then in turn could be easily motivated towards self-employment.

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TITLE OF PAPER: DEVELOPMENT OF ENTREPRENEURSHIP AMONGST CHILDREN AND ITS PSYCHOLOGICAL IMPLICATIONS.

Neeru Bala*

In a developing country like ours, the need for economic development hardly needs any emphasis. Industrialization is looked upon as a key to economic development. Entrepreneurship is the most important determinant in the process of industrialization.

Another pressing problem of today is that of increasing number of educated employed youth. How to utilize this reserve of human resource in a constructive way is the burning question of today? However there is no simple solution to it. This has to be dealt with in a multitude of ways. Setting up of small scale industries is one probable answer to it. It has been observed that the greatest potential of massive employment opportunities lies in small scale sector. Developing entrepreneurship is, therefore, one of the most potent ways to generate self-employment.

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'Entrepreneurship has been defined as the ability to preceive an opportunity, the foresight to see scope for its exploitation, the courage to undertake the task, and lastly the initiative and daring to take risks in the process of transformation. An entrepreneur is characterized by a style developed out of a search for opportunities in the environment and is one who is capable of organising resources to overcome challenging ventures (Singh, N.P. 1985).'

Entrepreneurial activities necessarily disrupt equilibrium-dynamic disequilibrium is what an entrepreneur creates. This disequilibrium creates ripples in the societal stream thereby advancing it and changing it. All that a society which wants economic growth can do is to create an environment in which a person with potential entrepreneurial capabilities could thrive. Entrepreneurs thrive in a society which assumes change as normal.

In an attempt to help its potential entrepreneur, Govt. and other agencies are providing various monetary and non-monetary incentives like the development of infrastructure, assistance in marketing, procuring raw materials and providing finance. These entrepreneurs become self employed and in the process create employment for others.

Entrepreneurship : Psychological characteristics

Practically all theorists (Lazarsfeld, 1959; Sawyer, 1954; Meier and Baldwin, 1957) agree that entrepreneurship involves decision making under uncertainty. It is interesting to note at this point that they do not see themselves as taking risks because of their confidence in their ability to believe that they can do better than facts warrant. Thus, self-confidence is an essential component of entrepreneurial role (Sawyer, 1954; Sutton, 1954).

They see themselves as taking calculated risks in which some skill and some luck are involved. It has been shown empirically that individuals with high need achievement motive prefer and work best under conditions of moderate uncertainty (McClelland, 1958) thus n-achievement is an important characteristic of an entrepreneur. McClelland et al (1969) indentified achievement orientation as the key variable in the development of entrepreneurship. He ascribes importance to child rearing practices as intrinsic determinant of the achievement motive and suggests that motivation training programme aimed at arousing latent need for achievement among adults will make them willing and eager to exploit the new opportunities provided (McClelland, 1961).

According to Rao, T.V. (1975) 'Entrepreneurial Disposition' includes the following factors:

i) Need for motive
ii) Long term involvement
iii) Resources (personal, social and material)
iv) Socio-political system.

To answer how these entrepreneurial skills develop in a person is not simple. Entrepreneurship is the result of complex interaction between environment and inherent potentialities. Since the need of the hour is to increase the number of entrepreneurs; now it has been thought that an attempt should be made to develop these skills in school children following the assumption 'as the twig is bent so grows the tree'. Through this attempt the aspiration of the children can be shaped. This effort may channelise their energy by exposing them to different aspects of the world of work of entrepreneurs/self employed persons. This awareness hopefully may result in a will to attempt at making something better, something new out of what is avaialble. In this direction schools can function as an instrument of change and of stimulating latent talents of students.

Guidance counsellors and teachers together with the parents can spot the potentials of entrepreneurship in their students/wards in terms of their aptitude, attitudes, basic skills, innovativeness and social intelligence. They can provide a favourable environment to such enthusiasts and thereby do a great service to the nation.

Entrepreneurship: Some Empirical Findings

A perusal of the available literature on entrepreneurship in small scale industries reveals a dearth of empirical researches on the development of entrepreneurship among children in India. A look at the historical aspect of entrepreneurship in India reveals that before Independence Entrepreneurship in India was concentrated in a few business families of Parsis and trading castes of Hindus and Jain Banias from Gujarat, Rajasthan and chettiars of Tamil Nadu. After Independence, new springs of entrepreneurship developed among other communitie like Brahmins and Naidus in the south, Patels of Gujarat, Kayasthas of W.Bengal, Sikhs, Khatris and Aroras of Punjab thereby making entrepreneurship a wide spread phenomenon.

Deshpande (1982) concluded that consideration of caste, family occupation and father's occupational status is important for one's entry into the business of manufacturing. However, Berna (1960) found that entry into industry was open to persons of very different social standing and economic positions.

Gaikwad and Tripathi (1970) observed that all the entrepreneurs were persons with initiative, drive and hard work, though the majority of them had no technical knowledge, nor strong economic base or strong political connections.

This study brings out an interesting finding about trader's opinion on industries. Traders, who are often looked upon as potential entrepreneurs hesitate to take up the venture as in their opinion it requires more financial investment, high managerial and organisational skills and technical knowledge. Besides these industries have a long gestation period.

Small Industries Extention Training Institute (SIET) Hyderabad (1974) probed into the reasons for starting industrial units. 'Economic gains' emerged as the most important reason for starting small industrial units followed by 'ambition','social prestige' and 'social responsibility in that order. Along with this, high demand for the product had been the most encouraging factor. Capital shortage and governmental redtapism were the most discouraging factors. It was observed that younger age, formal education, urban background, experience in industry, high level of aspirations, risk taking and adoption propensity were positively associated with the quality of entrepreneurship. However, technical education, high monthly income, being first born or oldest among the male children, contracts with influential persons and need for achievement were not associated with entrepreneurship.

Javillonar and Peters (1973) support the hypothesis that entrepreneurship among the Indian small scale manufacturers may be more meaningfully viewed as a situational phenomenon tied to the type of ownership of the business enterprise than as an individual phenomenon. The extended family system also facilitates an individual's entry into entrepreneurial role.

Nandy (1973) concluded that in an enterprising community, entrepreneurial exposures themselves contribute substantially to entrepreneurship is an important determinant of entry and survival in business. Need for achievement turned out to be the best predictor of entrepreneurial motives followed by n-power and the sense of efficacy.

Sharma (1976) affirmed that socio-economic background determined to some extent one's entry into manufacturing. He concluded that the role of government policies and its implementation is crucial to sustain the interest of entrepreneurs in the continuous expansion of business.

Above mentioned studies point out some of the salient features of entrepreneurship in India namely:

- Industrial entrepreneurship in India is not strictly an individualistic phenomenon, it is a result of collective ambition and aspirations of a family which are ultimately realised by the individual.
- Socio-economic background is responsible to some extent for one's entry into manufacturing but it is open to people with different social status and economic position.

- Economic gains, ambition, social prestige and social responsibility are some of the important reasons for starting small scale industries.
- Capital shortage and government redtapism are the most discouraging factors.
- n-achievement, risktaking, adoption propensity are some of the important qualities for entrepreneurship.

In the light of above emerging features author suggests a guidance programme aimed at motivating students to venture for entrepreneurship/self employment. It should encompass the given objectivew and methodology.

	Objectives	Mathodology	Target group
1.	To create an awareness about the need, prospects and scope of different areas for self employment.	Lecture, group discussion, audio visual displays.	Students, teachers, an Parents.
2.	To create an awareness among participants of their special abilities and potentials.	Administration of Psychological tests.	Students.
3.	To expose the partici- pants to the experiences of successful as well as struggling entrepreneurs.	Discussion	Students, teachers anc Parents.
4.	To expose participants to the various steps for establishing a small production unit/ business.	Lecture, Discussion Audio-visual displays.	Students.

	Objective	Methodolog.	Target group
5.	To expose participants to the Government's policies of giving various monetary and non monetary incentives for establishing small scale units.	Lectures/ Discussions	Students
6.	To enable participants to know the factors to be taken into consideration while selecting an enterprise.	Group discussions and Lectures.	Students.
7.	To organize inplant training/visits to workshop.		Students.
8.	To emphasize the importance of creativity in the area of work; exchange of creative experiences of successful entrepreneurs.	Lecture/Discussion	Students.

The main objective is to create an environment of enthusiasm for attempting new entreprises. At the same time the fear of failure is to be negated since negative thinking has always underestimated the potential for improvement among human beings.

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NATIONAL SYMPOSIUM

TITLE OF PAPER: CHILDREN'S MEDIA LABORATORY-A PROJECT TO DEVELOP INNOVATIVE MATERIALS FOR CHILD-CENTRED EDUCATION

Rajalakshmi Muralidharan*

Introduction

The National Policy on Education, 1986 has emphasized upon the child-centered or the learner-centered education. The NPE stresses the need for a "warm, welcoming and encouraging" approach to be used with children. As the term itself suggests, the child-centered approach brings the child to the forefront of the teaching-learning process. The needs, abilities and interests of children have to form the basis of childhood education. The teacher-determined education has to be replaced by the child-centered education.

The emphasis on changing the very basis of education emerges from the country's concern over the high drop-out and stagnation rates, particularly in primary schools. It is widely accepted that the early childhood years are very important for a person's development. Therefore, every child must have access to enriched environment. However, a large majority of children in the developing countries are first generation learners. They come from such homes where parents are busy working the whole day, to eke out their livelihood and do not have much time for their

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children. Their homes generally lack such stimulation which is taken as granted elsewhere in child rearing - play materials, story telling, singing, conversation etc. As a result when they enter school, they are thoroughly unprepared for formal learning and find it difficult to cope with the demands of the primary school. After a year or two of struggling along in school, a large number of them drop out of school as they do not find it interesting or meaningful.

India is trying hard to universalise primary education. It is therefore most important for the country not only to enforce hundred percent enrollment of children at least in the age of group of 6 to 11 but to retain them in school for sufficient time. Most of the drop-out is seen in the early primary classes which can to a certain extent be prevented if schooling is made attractive and meaningful and if children are prepared adequately for schooling. To quote from the programme of Action, "by making elementary education child-centered, we would be introducing a long - awaited reform in the system. The most important aspect of this reform will be to make education a joyful, inventive and satisfying learning activity, rather than a system of rote and cheerless, authoritarian instruction" (1986, P 13).

However, given the high pupil:teacher ratio in our schools, it will be difficult, if not impossible, for the teacher to provide such education without support. To make the child-centered approach a reality, in addition to the right attitude in teachers, there is a dire need to provide them with a variety of materials and suggested activities which can be given to a child or a group of children, keeping in view their interests and abilities, and which can be undertaken with as well as without the active guidance of the teacher, as the need may be. The UNICEF - assisted project, Children's Media Laboratory of the Deptt. of Pre-school and Elementary Education, NCERT is one such attempt to fulfill this need.

Children's Media Laboratory

The National Council of Educational Research and Training started a children's Media Laboratory (CML) Project in 1977 with UNICEF-assistance to develop stimulating and interesting materials for young children.

Objective of CML

The specific objective of CML was to develop or discover inexpensive, non-formal and effective media of educational and entertainment value for children of 3 to 8 years of age in effectively conveying the information, skills and attitudes that will enchance their life opportunities.

The CML has been committed to preparing/discovering materials which revolve around the young child's needs, interests, experiences and capabilities. The activity approach and play-way method have been extensively used in developing these materials. Care is taken to choose themes which are related to children's immediate environment and to present them in a playful manner, in the formats that are found to be appealing to young children.

Development of CML materials

Major work has been undertaken in four media under CML. They include print, audio, games and toys and projected media. Print - Varieties of printed materials are prepared for young children, such as picture books, picture cards, posters etc. They consist of story books, colour and form books, sense perception booklets, sequential thinking cards, playing cards for naming, identification and classification, cards for colour serialisation and pre-number concepts, environmental awareness etc. The books are colourfully illustrated and printed in bold type to suit the developmental level of children.

Audio Medium - A good number of audio tapes have been developed, keeping in view the interests and abilities of the young children. The formats include stories, music and games, and the themes stress body awareness, environmental awareness, number skills, language skills etc.

Games and Toys - Systematic surveys were conducted to explore the variety of toys, play materials and games already existing in the country. Based on the survey, teachers' manuals were prepared for the use of toys in the class-room situations. New games have also been developed side by side, particularly to develop personal hygiene and good habits in young children.

Project Aids - A limited amount of work has been done in the development of projected aids such as slides, slide-tapes, films etc. They deal with the immediate environment of the child and how to use it for the child's educational development. These materials can be used to help the teachers/early childhood education workers in understanding young childrens' interests, and activities/topics that can be undertaken to enrich their experiences.

Most of the CML materials aim at developing language and cognitive skills and promoting environmental awareness in young children. Though formative evaluations were done during development, it was found necessary to see how far an ordinary grass root level worker with minimum training and educational qualifications can make use of such materials in her routine work.

Impact Study of CML materia's on tribal disadvantaged children:

*A study was therefore undertaken to assess the effectiveness of CML materials, with the help of the child development workers working with the disadvantaged children, in the Integrated Child Development Services (ICDS) Scheme of the Govt. of India. The ICDS is a major national programme and covers more than 5 million children in the age group of 0-6 years from vulnerable pockets of society, providing a package of a services such as nutrition supplementation, health check-up, immunization, and pre-school education to children, and antenatal and postnatal care and supplementary food and nutrition education to pregnant and lactating mothers. As the infrastructure already existed in the ICDS scheme where disadvantaged children under six gathered regularly, it was decided to do the study through the workers of such ICDS centres.

Objective of the Impact Study:

1. To assess the effectiveness of the frequent use of CML materials on the development of the language and cognitive skills of tribal pre-school children.

2. To study the possibilities of helping the pre-school worker develop an interest in pre-school education by getting her acquainted with the CML materials and thereby helping her to

* Muralidharan, R. and Baljit Kaur. The Impact of an Intervention Programme on the language and Cognitive Development of Tribal Pre-school Children. NCERT, New Delhi, 1983.

develop similar activities through using locally available materials.

Sample:

The sample was drawn from the ICDS pre-school centres of Tokapal Project of Bastar District in the State of Madhya Pradesh. Bastar is a tribal district. Most of the houses in Tokapal are one-room mud hutments, none of them had electricity and drinking water facility was inadequate. Most of the adult population was illiterate; agriculture was the main stay of people. Not much attention was paid to young children as the adults were busy at work from morning to evening. Children roamed around and played with clay, pebbles, marbles etc. A kind of rice gruel was the staple food for both adults and children.

The pre-school centres were generally located in small dark hutments. The atmosphere was most uninspiring. Some broken and colourless toys were found here and there. The workers conducted a monotonous and repetitive programme for children. So, it was not surprising that the attendance in the centres was poor. The educational qualitifacations of the workers, by and large, ranged from fourth class to eighth class pass.

12 pre school centres were randomly selected out of the 62 centres in the project, out of which 6 served as experimental (E) group and 6 as control group (C). From each centre, 12 children equally divided into boys and girls in the age group of 3-6 years were randomly selected, six of them in the age of 3-4½ and six in the age group of 4½ to 6 years. In all, 144 children were included in the study.

Methodology:

a) Design - An experimental-control group and pretest-post-test design was used, with an intervention period of 2½ months.

b) Tools - Ten tests were used to assess children on various aspects of language and cognitive abilities. The tests were:-

1. Object Vocabularly.
2. Action Picture Reading.
3. Oral Expression
4. Listening Comprehension.
5. Acquaintance with Environment.
6. Sequential Thinking
7. Time Perception
8. Shape Discrimination
9. Colour Discrimination.
10. Draw-A-Man.

c) Testing - Testing was individually done. On an average 2-3 children were tested per day per tester.

d) Orientation of the Pre-school workers - After pretesting of children was completed, the pre-school workers of the E group were given an orientation in the use of CML materials and to utilize the locally available materials for conducting a meaningful early childhood education programme.

e) Distribution of materials - After the orientation was completed, the CML materials were made available to the E group.

f) Intervention - During the intervention period of 7 to 11 weeks, the research team withdrew from the field.

g) Post -testing - Post-testing was done on children from both E and C group, after the intervention of the E group was completed.

Results

The results (tables given in the appendix) showed that when pre-and post-test results were compared, the E group had scored more in the post-tests. It was statistically significant in most of the tests. It did not reach level of significance only in the tests of time perception and colour discrimination (Draw-a-Man test was not found to work in this group). The gain was most noticeable in acquaintance with environment, listening comprehension and oral expression amongst language tests and in shape discrimination amongst cognitive tests.

5.2

Discussion:

There is nothing surprising in the fact that an intervention ranging from seven to eleven weeks has made an impact on the tribal children and has resulted in their gaining better language and cognitive skills. The results are in fact in the expected direction. Several intervention studies done in other countries and some conducted in India have also shown the same trend. It is only natural that with adequate planned interaction, children gain in their language and cognitive growth.

What is more important is the way the interaction was planned. The atmosphere prevailing initially in the pre-school centres had been one of lethargy and disinterest. The pre-school workers did not have much of an idea of what a pre-school programme meant and therefore whatever little was done by them was done mechanically. The orientation programme therefore aimed at arousing enthusiasm in them and developing in them the skills to stimulate children. Using the materials of the Children's Media Laboratory as the basis, the pre-school workers were encouraged to work out a stimulating programme for the children by improvising equipments out of locally available material.

What is heartening is that the pre-school workers rose to the occasion and were able to implement the essence of the orientation programme in practice. During the intervention when the research team visited the centres, each worker came forward and enthusiastically showed samples of children's work using indigenous materials.

It is therefore only natural that such an intervention had the desired effect on children. In fact the training of the workers and the intervention programme run by them generated so much enthusiasm among the officials and the workers that they did not let the research team go back before they did a short training programme for all the 62 Centres in the block.

The main conclusions of the study are therefore:-

1) The workers if oriented and encouraged adequately are capable of bringing about changes in the language and cognitive skills of children, no matter how disadvantaged they are.

2) These changes are noticeable even within a short-time span of seven to eleven weeks.

3) The duration of the orientation of the workers has been of only ten days. It has been possible to bring about a change in attitude and generate enthusiasm within such short time.

Similar studies have also been undertaken in a rural and an urban-slum block of ICDS, findings of which are more or less similar to the tribal study.

To conclude, CML is an attempt to help the pre school workers/early primary school teachers by acquainting them with such materials and techniques that are attractive and appealing to children. They are support materials which are developed on the basis of the abilities, interests and needs of young children, and are aimed at bringing about a change in the passive, drab teaching - learning process that is in use in most of the present day schools. It is hoped that these materials should help a teacher to create a conducive and enjoyable classroom climate if he/she follows the guidelines carefully.

ANNEXURE

: i :

Table showing the means standard deviations and t-ratios between the E group and C group in both pretests and post-tests.

I) Object Vocabulary:

	Pretest			Post-test		
	M	SD	t	M	SD	t
C N=70	10.750	1.85	.107	11.735	1.79	1.75 (.)
E N=71	10.788	2.36		12.253	1.73	

(.) Significant at .10 level

II) Action Picture Reading

	Pretest			Post-test		
	M	SD	t	M	SD	t
C	7.336	2.23	.937	3.950	3.07	2.785***
E	6.830	3.30		10.295	2.64	

*** Significant at .005 level

III) Oral Expression (Right Objects)

	Pretest			Post-test		
	M	SD	t	M	SD	t
C	4.872	2.15	2.15	5.242	2.12	2.929***
	3.992	2.48		6.232	1.88	

*Significant at .05 level
*** Significant at .005 level.

IV. Listening Comprehension

	Pretest M	Pretest SD	t	Post-test M	Post-test SD	t
C	2.236	2.67	(.) 1.712	3.136	2.95	** 2.412
E	1.563	1.93		4.337	2.97	

(.) Significant at .10 level ** Significant at .01 level

V. Acquaintance with Environment

	Pretest M	Pretest SD	t	Post-test M	Post-test SD	t
C	19.613	5.85	*** 2.81	21.500	6.12	** 2.496
E	16.196	8.37		24.196	6.70	

*** Sign. at .005 level ** Sig. at .01 level

VI. Sequential Thinking

	Pretest M	Pretest SD	t	Post-test M	Post-test SD	t
C	1.164	1.04	* 2.22	1.293	1.10	** 2.25
E	1.661	1.57		1.816	1.33	

*Sig at .05 level ** sig at .01 level

VIII. Time Perception

	Pretest M	Pretest SD	t	Post-test M	Post-test SD	t
C	2.45	1.27	.277	2.393	1.26	1.622
E	2.506	1.12		2.732	1.22	

VIII. Shape Discrimination

	Pretest M	Pretest SD	t	Post-test M	Post-test SD	t
C	7.214	2.03	.627	8.386	2.86	*** 3.285
E	6.979	2.41		10.140	3.46	

*** Significant at .005 level

IX. Colour Discrimination

	Pretest M	Pretest SD	t	Post-test M	Post-test SD	t
C	8.27	2.74	1.027	9.272	3.22	1.322
E	7.768	3.06		10.05	3.70	

X. Draw-A-Man (Percentage of children who made scorable meaningful drawings).

	Pretest	Post-test
C	55.71%	52.85%
E	43.80%	60.56%



NATIONAL SYMPOSIUM

TITLE OF PAPER: CONCEPT DEVELOPMENT, DIAGNOSTIC TESTING AND REMEDIAL TEACHING

E.G.Vedanayagam*

The period of childhood, 2+ to 11+ years, is crucial for developing thinking. It is during these years that the child develops the ability to think and thereby becomes less dependent on sensory motor actions for the directions of his behaviour. The transferring of action structures to thought structures takes place at this stage. With increase in maturation and diversity of environmental stimulation, the child not only gains greater ability to think but also improves his response to stimuli. It has been well established that intellectual growth of children can be quickened by providing a variety of opportunities for exploring and experiencing the environment. The classroom gives also ample opportunities to develop thinking through paced instruction to match each child's capabilities.

Cognitive development which includes thinking ability is manifested by increasing the child's ability to respond in terms of symbols and language that lead to

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concept formation. Formation of correct responses depends on understanding of correct concept. Correct concept formation depends upon the learner's ability to classify various events or objects according to some quality or characteristic common to each event or object in the group but not to others. To this distinctive quality, known as attribute or a combination of attributes, the learner responds in terms of concepts rather than individual stimuli. Thus learning concepts is a task of learning attributes.

Concept formation is however a gradual process. Concepts are gradually formed by observing, perceiving the similarities and differences in innumerable examples and non-examples and finally reaching the conclusion that different items belong to the same category. Bruner(1958) explains that the person invents categories and forms concepts. The categories enable a person to forms concepts. The categories enable a person to group together objects that have similarities and categorisation is done on the basis of their common traits. A child who has a stock of concepts uses these to face new situations or new phenomena. New concepts are formed when the existing stock of concepts is inadequate to cope up with the new situation

or phenomena. The process of acquiring additional concepts to enlarge the stock of concepts is termed concept attainment (Stones, 1966). The attainment of a concept is therefore, learning a new concept and utilising it after it has been learned. Concept attainment is much more a matter of modifying and adopting one's existing concepts to new uses than forming completely original concepts. Concept formation then becomes an act of invention and it is an act in which new categories are formed. Bruner states that concept formation is the first step towards concept attainment and these are the two components of categorising activity.

The relationship between concept learning and cognitive development has been analysed by many psychologists, such as Piaget (1964); Ausubel (1963, 66, 68, 77); Bruner, Goodnow and Austin (1956); Gibson and Levin (1975); Miller and Johnson-Laird (1976) and Klausmeir (1976). The Conceptual and Development (CLD) theory proposed by Klausmeier is a cognitive information processing approach to learning and development. This theory differs markedly from that of Piaget's (1964) structure theory. Piaget's approach to cognitive development imposes strong developmental constraints on children's concept learning. To Piaget, developmental

factors precede learning and are pre-requisite for learning. But conceptual Learning and Development Theory does not impose any sort of developmental constraints on children's concept learning. CLD theory posits levels of concept development rather than stages of concept development as proposed by Piaget. It is explicitly seen that Klausmeier's theory indicates that concept learning leads to cognitive development.

In the classroom, concept learning can be quickened by pacing the instruction to match the learner's present capabilities. Students can learn and think at higher levels provided the matter for instruction is presented in a manner that can be understood by them. It is known that students of the same age group vary widely in the level of attainment of the same concept, in their understanding of principles and in the taxonomic relations. Failures in schools may largely be due to the reason that students are at various conceptual levels of understanding and teaching is organised to suit a particular level assumed by the teacher as the level of students in the classroom. In order to achieve better achievement level, the teacher should recognise the differences in the learnability of concepts and should also change the method of instruction to suit the levels of concept attainment of the students. Teachers therefore need to have knowledge of the levels of concepts attainment of the students and the correlates of the concept level attainment.

A recent study on concept development and attainment (Rajeswari, 1988) suggests the following:

In the classroom teacher should devote more time in teaching concepts. In many schools rote learning is emphasised. In rote learning students merely learn and memorise only string of verbal association, without understanding the principle of the subject matter. Only if the student understands the concepts and its attributes fully he can generalise the instances and discriminate non-instances. Attainment of a concept of formal level will not lead to the application, or uses of the attained concept in various ways.

Understanding of attributes leads to the attainment of the concept. For this, classroom instruction should be properly arranged so that students will be engaged in the active search for the attributes.

Children of the same age may have different levels of knowledge about the same concept. Factors other than age play an important role in determining the level of concept attainment, and concept mastery. Some children because of environmental conditions would not have

encountered actual instances of a concept i.e. concrete experiences, rather they might have heard the concept verbally. Some students would have stopped at the lower level of attainment because they might have encountered number of perceptible instances and never had the oppor - tunity to generalise or define the concept. It is imperative on the part of the teacher to design classroom teaching to suit various conceptual level of the students. Concepts should be introduced in such a way that students are given opportunities to confront the concept at various levels. Students should be able to understand the concept at all the four levels specified by Klausmeier in his CLD model.

To achieve this, objectives should be formulated in such a way as to cater to the individual differences in the levels of concept development.

Assessment exercises can be framed to evaluate the students' ability to understand a concept at all the four levels and their uses by selecting the related set of concept that the students are going to learn. On the basis of the results got from the above tests, objectives for the particular subject can be framed. Task analysis of the concepts before the introduction of the concepts is essential.

The key concepts of various disciplines that are normally introduced during the elementary school years and continued into high school could be analysed for various school population and books can be designed on this basis. Each educational institution should have these books explaining concepts at various levels in the library for reference by students. High school students could profit more from experiences with concrete, non-verbal representations.

By manipulating minor changes in the instruction, large differences in the attainment of the concept can be expected.

By exposing them to rich and stimulating influences, children could be helped to acquire higher levels of concepts even at an early stage. Developing an intention to learn a concept is essential before learning a concept.

DIAGNOSTIC TESTING :

At the elementary and middle school levels, teachers come across pupils who are severely retarded in the basic tools of learning. Some of them just cannot read. Others have difficulty with spelling, handwriting, arithmetic, language usage etc. Such pupils show poor performance in their class

work as they are handicappc in not being able to use the fundamental tools in their school work. Further, they are at a disadvantage in successfully meeting many out-of-school situations. Many of these pupils need special diagnosis of their problems and remedial help.

In a generic sense, diagnosis means a careful study of the condition, to determine its nature and find out about causation, with the main purpose of correcting and remedying the difficulty. In line with this thinking, generally diagnostic tests are designed to analyse the individual's specific strength and weaknesses in a subject and suggest causes for his difficulties. This may be in the form of additional instructions given on an individual basis or modify the teaching methods.

In the process of making a diagnosis, it is necessary to correct facts and tests can contribute many of the needed facts. However, the heart of the diagnosis is not testing alone. The importance lies in the intelligent interpretation of the facts by a person or a teacher who has both the theoretical knowledge and the practical experience to know the right type of questions to ask, the correct procedure to select, including tests that can give the needed facts, to interpret correctly the meaning of the

findings and to comprehend the interrelationships of these facts and meanings. The outcome of a diagnostic study, then, is a plan of treatment, consisting of two parts, a plan for correcting or reducing those handicapping conditions that interfer with learning and a plan for remedial instruction based on the findings.

Consider the example of a pupil who has attempted a solution as follows:

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 215 x
  25
1125
 430
1555
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The problem with this pupil is not even the multiplication process but the principle involved in multiplying by units, tens, and hundreds. A little attention to this specific problem would be more helpful than reteaching the whole unit.

Other examples are: What is 1/10 of 8.7256 ? Different answers are given by pupils, when all they have to do is to point off the decimal correctly. There are a number of students in the high school who cannot answer the questions, which is larger, 73/8 or 75/8 and how do you tell?

Students are often accused of being weak in history and geography when their real problem is weakness in reading. They read their lessons in the text books so poorly that they cannot understand what is read and therefore do not give any geographical or historical information.

The process of reading involves more than the mere vocalisation of words. A child must be able to recognise words, pronounce them properly with correct intonation and read easily and fluently, comprehending what he reads with recall ability. Speed of reading vocabulary are also other factors to be considered in the process of reading. A combination of an oral reading survey and a silent comprehension text provides a good way to locate the children with reading problems. It should be remembered that proper reading forms the basic foundation for learning, but how many of our pupils can read with comprehension even in their own mother tongue ?

In the case of learning a language, a child must be able to speak and write effectively. The degree of proficiency needed in these basic skills of a language obviously varies from individual to individual. Pupils planning to follow literary careers should develop certain abilities in the use of language, which would perhaps

be unnecessary for those planning to enter mechanical fields. However, every individual in a society has the frequent need to communicate both orally and in writing with other members of the group. Therefore it is imperative that all pupils completing the middle school should have the fundamental aspects of these two phases of language expression, namely, literature and language (grammer). Diagnostic and remedial work in the fundamentals of a language should be the prime concern of the schools.

While the lack of fundamental skills may be the basic cause for pupils' inability to cope with arithmetic, reading or language, it is possible that other causes such as low ability, illness, emotional tension and stress, personality problems, responsibilities at home, sibling rivalary etc, could also contribute towards this problem.

It may not be out of place to explain the differences and similarities between achievement/instructional and diagnostic tests. Achievement tests are used in measuring the present level of knowledge, skills, competence etc. A teacher can prepare an achievement test on a unit of study after he has completed it, in order to see if the pupils have mastered it. He gives such a test because he wants to make up the deficiencies before he starts on a new unit.

A diagnostic test pays little attention to what has first been taught but reviews the whole subject to find out any difficulty that the pupil may have in any phase of the study. It seeks to discover the cause of the weakness or the problem and is more comprehensive and thorough than the achievement test,specially in the basic skills. Both the tools are concerned about giving information regarding remedying weakness in a particular subject. Depending on the purpose and the time available, these tests can be used to help students to do effective learning.

Remedial Teaching:

It has been stated by educators that Remedial teaching is essentially good effective teaching and that the main difference between remedial teaching and regular classroom teaching is that remedial teaching is carried out more thoroughly, more systematically and more effectively. There is a good deal of truth in such a statement.

One of the chief functions of the remedial teaching is removal of the ill-effects of the original poor teaching and/or poor learning. It is therefore concerned with students who have formed ineffective methods of handling the tools of education. Remedial teaching is based on a

carefully planned programme of diagnosis of defects and causes, correction of weakness and elimination of poor study habits that may be found. The terms 'remedial' is also used in a broader sense to connote teaching which is developmental in its scope. Students are frequently found in schools and colleges who do not possess any particular defects or faults that need correction but who essentially need assistance in developing, increased ability and competence in reading and other fundamental processes. It is not primarily a problem of reteaching or the remedying of defects but it is rather teaching-may be for the first time-those basic skills which are badly needed and which are apparently lacking. From this point of view, remedial teaching involves taking a student from the point where he is and leading him on in the direction of greater achievement. It is merely good teaching, focusing on the learner and his needs.

The much popular slogan, teach, test and reteach, needs a little modification when students are scheduled for remedial work. It should be 'test, teach, retest'. The students have failed to master the material when it was first taught to them, so the teacher starts with testing to determine what needs to be retaught. On the basis of

his results, he decided upon an appropriate plan of teaching to overcome the difficulties which are apparent. After proceeding with this kind of instruction for a while, it is necessary to test again and see whether the difficulties which were present at the beginning have been overcome and whether still newer difficulties have now arisen. It then becomes necessary to plan another teaching programme in the light of the new information and to continue in this way until achievement is generally satisfactory. Therefore any remedial teaching should start from what the student knows, identify the difficulties of the students, select appropriate methods for teaching and secure the motivation of the students to learn and develop the skills of learning.

REMEDIAL TEACHING OF READING

Reading is the meaningful interpretation of verbal symbols. It is an extension of oral communication and builds upon listening and speaking skills. In the beginning stages, learning to read means learning to vocalise the written symbols or marks. The child may say the words out loud or he may say them to himself and in either case, reading means saying the correct words. The discovery, that printed words 'talk' is the first step in learning to read.

While meaningful response is the very heart of the reading process, it should also embrace "all types of thinking, evaluating, judging, imagining, reasoning and problem solving".

As the child advances in his grades, from the task of recognising words, he is led to understand a new range of ideas, concepts and master new forms of expression. An efficient reader learns how to comprehend what he reads, to distinguish major from minor points, to follow directions, to interpret, to summarise and to outline. Finally reading becomes reflective and evaluative. A student must be able to grasp the meaning and organisation of a writer's ideas that a mature reader relates his previous knowledge and experience to his present reading and compares the facts and arguments presented by one with the other. The nature of the reading task, therefore, changes as the learner progresses, from less mature to more mature levels. Reading is not one skill but a large number of inter-related skills that develop gradually over a period of time.

A study conducted in one of the colleges of education in Tamil Nadu showed that the average rate of reading for students of Class V was 59 words/mt. When compared with

American norms, this is lower than the norms fixed for second grade. A student in Standard XI had a speed of 170 words and this is lower than the norms for Standard V in USA. The average speed for B.Ed. students was 176 words in Tamil (lowest, 93 and highest 240 words). In English, the average was 214 words (lowest 124 and highest 300). So there is a great need to improve speed in reading in our country.

A first step in a remedial reading programme is to identify such of those students who need attention. The following procedures may be followed for this purpose.

(a) observing pupils while they study

(b) studying eye movements during reading

(c) using interest inventory

(d) graded text-books

(e) standardized/teacher made tests - silent and loud reading

Informal teacher-made tests can be used effectively for both diagnostic and remedial purposes. Types of questions that can be employed in evaluating reading comprehension are:

1. Questions which measure ability to understand stated facts.
2. Questions which measure ability to comprehend facts that are implied.

3. Questions which test whether the pupil is able to gather the central idea of the passage.
4. Questions which test whether the pupil is able to gather the central idea from a paragraph.
5. Questions which evaluate the ability to read and understand questions.
6. Questions which check the pupils knowledge of word meanings.

The specific type of the remedial treatment to be given to a pupil will depend on the diagnosis made of his reading and other personality variables. Some of the general rule of procedure are :

1. Begin where the pupil is.
2. Inform him frequently his progress by means of charts and graphs.
3. See that the exercises engaged in satisfying some basic goal of the pupil.
4. Frequently commend the pupil for work well done.
5. Give a variety of exercises and activities so that the work will not become monotonous.

Speed of reading can be improved by means of extensive reading, use of time limit and certain mechanical instructions.

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Power of comprehension in reading can be increased through vocabulary enrichment, broadening the background experiences and by specific practice in reading material of a variety of types.

Reading ability is not a unitary trait but a complex of skills that must be developed by appropriate practice.

Conclusion:

Remedial teaching should form an important aspect of classroom teaching. If concepts are well formed and effectively attained even from the pre-school stage, perhaps there wouldn't be a need for diagnosising and remedying the ineffective and inadequate concepts that are formed or acquired. This not being the case with many of the children, remedial teaching has to become part of the school programme to enable the students who have difficulties in comprehending the learning material. In this way individual child is taken care of in regard to the academic performance at his grade level.

TITLE OF PAPER: DEVELOPING INSTRUCTIONAL STRATEGIES TO REDUCE CASES OF NON-ENROLLED, NON-ATTENDING AND DROPOUT CHILDREN AND TO MAKE EDUCATION MORE MEANINGFUL

S.Srivastava*

India is the biggest democracy of the world. We believe and believe with conviction that all those who are born in a democratic nation have a constitutional right to be educated and we teachers have moral obligation to give them quality education. It is essential that local citizens of India must attain some minimum standard of education if India wants to develop politically, socially and economically. Realising the importance of education for the development of the country the framers of the Indian constitution have made it obligatory on the part of the states/centre to provide free, compulsory and universal education upto the age of 14 within a period of ten years after its adoption in 1950. Provision of free and compulsory education to all the children until they complete the age of 14 years is a Directive Principle of the constitution. Determined efforts have been made since independence towards the achievement of this goal. Since 1952, through five year plans, the Govt. both at the central and state levels, have been making all

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out efforts to attain the above objective. From the available statistics, it seems that we are still far from the goal of providing free, compulsory and universal education to all children in the age group of 6-14 years. Even the efforts to cover the children in the age group of 6-11 years have not met with sufficient success. In order to quantify exact position in Punjab with special reference to Ferozepur a survey with the financial assistance of Planning Commission, Govt. of India was taken up as a pilot study because the story is almost same everywhere with minor variations. The project was 'A Survey of Non-enrolled, non-attending and dropout children of the age group of 6-14 in the Dist. of Ferozepur'.

Objectives

The major objectives of the study were:-

1. To determine the extent of non-enrolment, non-attending and drop-out at the elementary stage of education (age group 6 to 14 years),
2. To determine the socio-economic composition and sex-wise composition of the non-enrolled, non-attending and drop-out children,
3. To examine the differential rates of non-enrolment, non-attendance and drop-out children of rural and urban areas, and
4. To find out whether school variables played and significant role in enrolment, attendance any drop-out.

Sample

The samples consisted of fifty primary/middle schools of Ferozepur district of which twenty were from urban areas and thirty from rural areas. These non-enrolled, non-attending, drop-out cases were sampled on the basis of one-third of the total of 5,212 cases. The sample also included 200 teachers and parents of 2,500 children and 50 community leaders. The tools of research were inquiry proformas, interview schedules and questionaires. The statistical technique involved the use of descriptive statistics and t-test.

Findings

The major findings of the study were:-

1. The percentage of non-enrolled children in the age group six to fourteen years ranged from 2 to 10. Since 1970, the number of non-enrolled children in this age group had been on the increase. The number of girls who tended to remain out of school was higher than that of boys. The incidence of non-enrolment in the rural and urban areas did not differ significantly during 1970-71, 1972-73 and 1974-75 but it differed significantly during 1971-1972, 1974-75, 1975-76 and 1976-77 and 1977-78.

2. There were significant differences among the non-enrolled children of urban and rural areas but school facilities and the number of teachers had no relationship with the incidence on non-enrolment.

3. A majority of the non-enrolled children belonged to economically backward class and a majority of their parents were casual labourers small cultivators, artisans, petty shopkeepers, etc. The educational background of the parents of the non-enrolled children showed that one-third of the parents were illiterate and one-fourth had studied up to the middle.

4. The incidence of non-enrolment was higher in the primary classes than in the middle classes and was more acute in the first three classes.

5. The non-attendance was more acute in rural areas and in the case of girls. There was no significant relationship between school facilities and non-attendance. The same was the case regarding the number of teachers and non-attendance.

6. More than 50 per cent of the parents of non-attending children were illiterate. The children of uneducated parents in urban areas were more irregular than those of uneducated parents in rural areas. The girls were on the whole more irregular than the boys.

7. A large majority of the parents of the non-attending children were engaged in manual work like casual labour and cultivation, etc.

8. The parents of a majority of the non-attending children belonged to economically backward class.

9. One-third of the children left the primary school before completing the primary education. In the middle schools, the tendency of dropping out appeared to be less.

10. The number of the drop-outs was higher in rural areas than in urban areas. Out of 100 children admitted in Class I in rural areas, only twenty-five reached Class VIII, whereas in the urban areas only twenty students dropped out.

11. The educational background of the parents of the drop-outs was very poor, more so in rural areas than in urban areas. The parents of the drop-out children were economically backward and they belonged to low occupations.

12. The major reasons given by the parents for non-enrolment, non-attendance and dropping out were : the need of the child to work in homes, unsympathetic teachers, dull curriculúm, lack of utility of education. lack of interest in education, lack of

text books, and lack of education among parents. The major factors which aggravated the incidence of non-enrolment, non-attendance and drop-out among girls were : lack of separate schools for girls, lack of awareness of the education of girls, distance of school from home and the necessity for girls to look after their young brothers and sisters at home.

13. The community leaders felt that discouraging teachers' attitude, poverty, parents' negligence, lack of employment facilities, education not related to daily life and employment and narrow outlook of parents were the major factors for non-enrolment, non-attending and dropping out.

14. In the opinion of the teachers 'Poverty of parents', 'Presence of child at home', 'Indifferent attitude of parents', 'Uninteresting curriculum', 'Dull school atmosphere' were the first five major causes of non-enrolment, non-attendance and drop-outs.

Though there was variation in the opinion of rural and urban teachers about the causes of non-enrolment, non-attendance and drop-outs but their ranking did not differ much.

15. It had been found that 69.1% parents of non-enrolled, non-attending and drop out children carry 'average attitude towards education', which means they did not hold any firm conviction towards education. Only 18.23 per cent parents had a positive attitude towards education. Only 12.72% parents held negative attitude. Thus it could safely be concluded that two-third parents had untoward attitude towards the education of their children.

Crisis points

Having discussed the causes of non-enrolled, non-attending and drop-out children the question arises what are the crisis points through which one can analyse the problem for finding the probable solutions:-

a) Lack of awareness on the part of the parents about the importance and utility of education in one's life.

b) Socio-economic status of the parents is another crisis point as it is found that parents having low income, illiterate and having skilled job have untoward attitude towards the education of the children.

c) Education needs to be related to the real-life situation. Immediate utility cannot be foreseen by the parents for the formal education system.

d) Uncongenial atmosphere of the school such as unsympathet attitude of teachers, rigid curriculum, and stereo-type teaching. create apathy among children for education.

e) Education is not related to employment.

f) Education creates elitist morality.

Some of the remedial measures are already suggested in this respect such as :-

a) First generation learners are allowed to set their own pace and supplementary remedial instructions.

b) Cognitive learning components and skills among the children are being developed through practice.

c) The policy of non-detention at he primary stage may help in improving the situation to some extent.

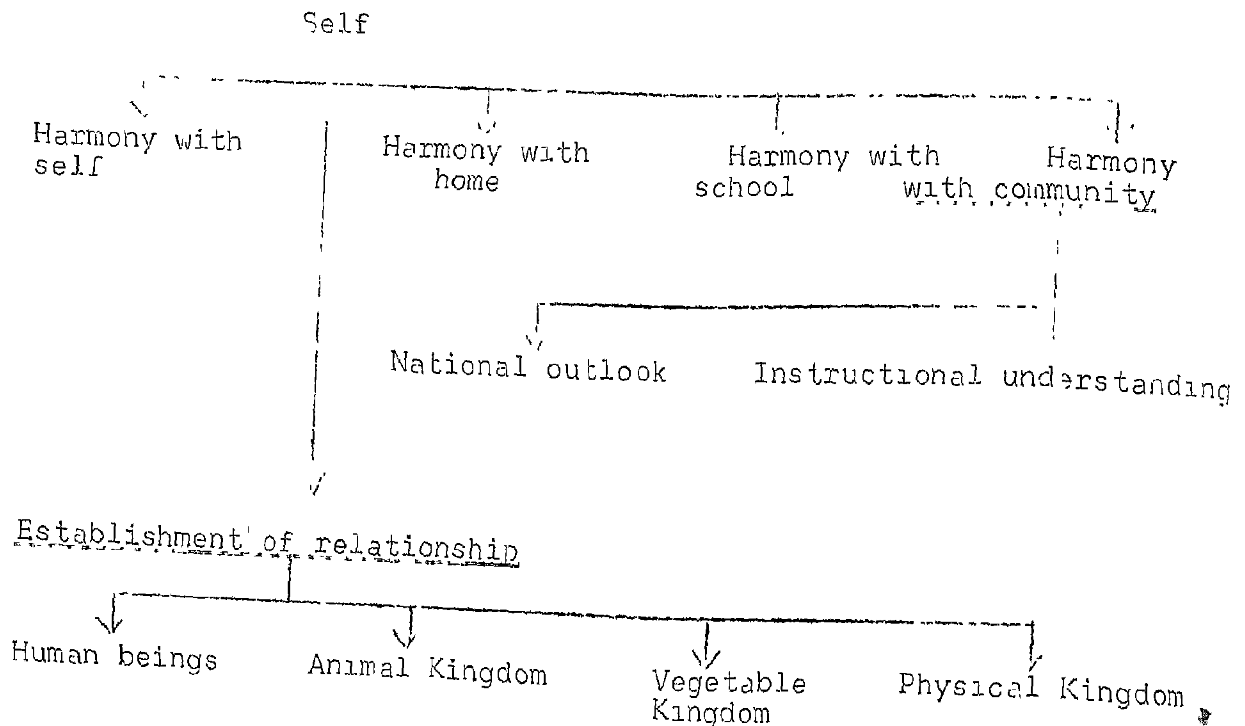
d) No corporal punishment is also a welcome step in this regard.

e) Comprehensive evaluation of alround development of personality including scholastic and non-scholastic traits will help the children to develop wholesome attitude towards life and to develop required competencies, skills, attitudes and values in the interest of the national development in general and self in particular.

Creating awareness

The investigation revealed that the crisis has emerged mainly because of the lack of awareness on the part of the parents with regard to utility of education. Crisis of awareness is created because of the lack of communication. Parents do not find themselves in a position to perceive things in right perspective and do not make dynamic adjustment with the fast changing society. Distant education, use of multi-media and television, video cassettes, film, filmstrips, radio, tape-recorder, posters, models, non-formal centres of education, adult centres etc. can prove to be powerful source of re-educating the community in this regard. In fact awareness and adjustment go together when an individual is conscious of the need of some knowledge or wisdom, he/she automatically develoos a favourable attitude towards learning and getting himself adjusted to changed environment. This awareness and adjustment are required at all the four levels, i.e., self, home, school and community.

Adjustment Model for developing harmoney at various levels:



Instructional Strategies

1. Self level

For creating awareness regarding the self one has to help the child in making him realise that in order to develop harmonious personality, one must know himself, his feelings and his acts. The children should be acquainted with all those existing things because of which they are finding their living so comfortable. The child should be helped to

realise that he is living in the world of relationships not only with the family, with the school, with the community, rather with all the four kingdoms such as human beings, animal, vegetable and in-animate world.

a) Human Kingdom

In order to realise the importance of the relationships in the development of the individual, the child should be encouraged to remember with gratitude and reverence whatever services he has received for his own advancement in different ways. For this purpose children may celebrate relationship days as parents day, sister-brother day, community day, humanity day, etc. during which they may express gratitude for the services they have received and confess the wrongs done by them by word or deed and to make amendments for the wrongs. This will enhance harmony in their relationships and make them aware of the needs and importance of living with others.

Family is an important component in socialisation of the child. Unconditional love bestowed by parents has no parallel in this world. The home atmosphere should be such where children should automatically develop higher values of life. Broken homes, uncongenial relationship of mother

and father, poverty, too many children in the family, and strict disciplinary attitude mostly constitute adjustment problems for children.

In the changing social pattern, school is considered to be the most important agency for the harmonious development of personality. With the trend of entering more and more women in the jobs, the responsibility of the schools has increased. Thus schools have moral obligation to train the children in observing their duties towards all the kingdoms.

b) Animal Kingdom

As regards the Animal kingdom, schools should celebrate animal days. Children should be encouraged to prepare album and scrap books. Visits to zoos and bird sancturies and knowledge and understanding of animal life through the mass media will enable the children to develop a sense of harmony and oneness with the animal kingdom. Children may be encouraged to have group projects under the supervision of teachers in order to discover how animals help in maintaining ecological balance and improve human life.

c) Vegetable Kingdom

Flora and fauna are important components of nature and they affect the quality of human life. The new attitude towards them need to be inculcated among children. They should develop the concept that survival of the individual depends upon the plant kingdom and teaching needs to organise activities around this idea.

d) Physical Kingdom

Existence of human being is dependent upon and conditioned by physical world, i.e., earth, water, air and ether (sky). As such human beings have no right to pollute environmental beauty and unduly exploit its natural resources.

The child needs training to respect all the entities by utilising their services and preserve their beauty such as food, cloth, houses, gardens, books, desk, etc. These should be handled with care and a sense of belongingness. Group projects should be encouraged among children as to write down the utility of physical objects that have contributed towards their existence and in return what can they do to preserve and enhance their utility and aesthetic beauty.

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e) Maintaining diaries

Children should be encouraged to maintain diary and write down daily whatever services they might have done to others such as helping mother in kitchen or helping a blind to cross the road or serving ill-persons. At the same time he should write down whatever wrong he might have committed by stealing,telling lies or showing disrespect to parents and teachers. This will help in developing a child a habit of introspection and self-analysis. He will learn them by having better communication and relief after making confession. This will further help in developing the qualities like reverence, gratitude, tolerance and cooperation.

2. Community living

We should train the children in developing 'We' feeling instead of 'I' to enhance the group harmony and to develop the sense of community living by mutual understanding. Group activities like scout, guides, NSS, NCC,etc., will help the children to rise above their narrow loyalties and to develop larger loyalties which come across, ideological, religious and racial differences. Children from different psychological, cultural, religious, rural

and urban background should be exchanged in order to develop the sense of national integration. Community singing, community dinners, community games etc. should be encouraged. Religious festivals of different regions should be celebrated at a common place irrespective of caste, creed or religion. Children should be encouraged to visit and share grievances of the children of orphans, blind-homes or those who are handicapped and spend sometime with them as much as they can afford. Group living should make them realise that the good of the individual and that of the group are mutually inter-related.

3. National Outlook

Teaching should develop a sense of patriotism, a sense of belongingness. For this children should be encouraged to keep their national flags, national emblem and to learn national song. Donations based on economic, political and social, religious, regional considerations should not intervene with the upbringing of the children. Projects like 'Know your country' should be given to the children through lectures, discussions, literature, magazines or through mass media. Children should know the similarities and diversities among different groups of nation. Discussion

on the themes 'What are the things in your country you are proud of , and 'what are the things of which you feel ashamed and which need to be corrected' can be arranged . What children can do at their own level should form the part of the curriculum. Children should be made aware of the problems which create disharmony in the nation and may be asked to take up some group projects such like exchange of students, to develop a sense of national unity.

4. International understanding

Dr. Radha Krishnan wanted UNO to stand for "A new life, a new outlook, a new philosophy which will inspire humanity so that a world brain, a world mind or a world culture is created". Individual who cannot be a good citizen of his own country, cannot be a good citizen of the world. The problems of a nation in a way are the problems of the world in a wider perspective. Therefore, our teaching should develop a widened vision from national to international problems. And to achieve this objective, children should be given right type of knowledge and perception so that they can feel and act rightly.

Humanistic songs, debates, discussions, and dramas on international themes should be encouraged. Biographies of the persons such as Christ, Budha, Gandhi, Tagore,

Tolstoy, Lincoln, Martin Luther King, etc. who have worked for the uplift of the weaker sections should constitute an essential part of the curriculum.

In order to develop international understanding among children along with national flags each child should be provided with UNO flag to remind him that he is a member of a bigger family. UNO day, human rights day, etc. should be celebrated by planning follow-up modalities. To establish better communications, UNO may plan and develop satellite programmes such as 'Know your World' through which children may be brought into contact with different world cultures, customs, etc.

Right perception of relationships at all levels is sine qua non of making instructional strategies more meaningful. A new ethics need to be evolved to educate children in right perspective.

NATIONAL SYMPOSIUM

TITLE OF PAPER: PERFORMANCE APPRAISAL SYSTEM - SCHOOL TEACHERS

K.M. Bahauddin*

1. Introduction

Teacher is most crucial in improving the overall quality of education and in the implementation of any educational policy. The ingenuity, innovativeness and the dedication of the teacher is much more important than the resource input. The dedication and ingenuity of teachers can to a great extent overcome deficiencies in the resource. The NCT report states that "the difference between the good schools and bad ones, is essentially the difference in the quality of its teachers".

The teacher is called upon to perform a variety of tasks. Continuously changing curricula, students coming from different social background with their own social problems, widely varying expectations, values and interests, the needs of the society and the relevance of the educational system to changing social needs, etc. add to the problems.

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The teacher has to renew himself to keep up with the explosion of knowledge and develop expertise for effective implementation of the curricula. He has also to build confidence among the students so that he can be effective. He has also to function as a builder of bridge between the school and community. Another role the teacher will have to perform is to help the Headmaster/Principal in institutional planning and management.

The national policy on education recognises the multiple role the teacher has to perform . In view of the crucial role he plays, the teacher deserves recognition. The NPE states that no people can rise above its own teachers. The government and community should endeavour to create conditions which will help motivate and inspire teachers on constructive and creative lines". The economic well being of the teacher is also recognised as a prerequisite. Radha Krishnan Committee report states that" in this age of money, economy and private motives, it is/in vain to expect that teachers alone would rise above the spirit of time". The NPE suggests the needs to formulate salary structures and service conditions which would attract and retain competent persons in the educational system.

Need for Performance Appraisal

An effective performance appraisal system (PAS) is recommended by NPE. Understanding the contribution of

individual teachers to the development of the institution and improvement of students, is vital for any reward system. The PAS should help the teacher to grow academically and professionally. It should help develop initiative and innovativeness in teachers. PAS should not be designed as a punitive instrument against the teachers. Social working groups can be resistant to change. But there is crying need for change in the educational system. PAS cannot be effective unless the teachers consider it for their development. It should become an instrument for development of institution and improvement of educational system.

Status of the teacher is to be defended but status is not something that can be demanded as a matter of right. The NCT report states that "the teachers status is something that can be won by teachers through competence and hard disciplined work and unwavering commitment". Personal development, acquisition of new knowledge, development of practical skill of teaching and building team work go hand in hand with personal and institutional development. PAS should be an instrument to understand relatively the effort made in this direction. Similarly academic freedom is to be defended but there is a need to clarify what it is. Academic freedom can be considered as the right of the citizen to seek the truth and pass it on to others, the right to question, to

discover and disseminate knowledge useful to the society. The price of academic freedom is vigilence against deterioration of standards. PAS can be an instrument in reducing the deterioration of standards.

Conditions for Effective Implementation

For proper implementation of PAS for teachers, work climate in which not only the teachers but every other category in the hierarchy, is motivated to do his work conscientiously and evaluated is necessary. The effort directed solely for staff development is ill spent if not accompanied by an equal concern to improve the structures and procedures in the educational system. The teacher should get an opportunity to exercise his creativity and professional ability to improve the teaching-learning environment. Evaluation without giving weightage to the specific situation of an institution may not also yield the desired result. Political will is essential for bringing about such a desired change in the educational system.

The PAS is very much linked with these measures and also the operation of incentive/reward (monetary and nonmonetary) system which motivates the teacher and provides opportunities for self development compatiable with his aptitude, competence, and interest.

2. Present Situation

Every state in our country has a system of inspection and supervision. Conduct rules are also prescribed. Very often government servants' conduct rules are máde applicable to teachers also. Some states have framed seperate conduct rules which have clauses like 'an attitude of simple living and high thinking', mannerly conduct, sweet disposition etc.

The educational administration Survey conducted by NIEPA in 1975 gives some indication of the nature of the teacher evaluation. In many states, there is no proper teacher evaluation after they are selected to a post. The confidential report which is applicable to government servant is made applicable to the teachers also. Wherever the teachers are evaluated, it is mostly based on examination results, the impressions of the Head of the institution and the impressions of the inspector who occasionally visits the institution for one or two days. In one state, the headmaster appraises the classroom performance of teachers by visiting their classes and noting his observation in the log books. The inspector also records his opinion at the time of inspectio There is insistance on preparation of unit plans at the beginning of the year. Broadly this is the approach in all states. But it is being enforced with varying degrees of looseness.

- absence of reward system which will motivate teacher to perform more effectively

- a fear that appraisal data could be used for punitive purposes instead of formative purposes.

4. New System

Any performance appraisal system should lead to the development of individual teachers and institutions and should contribute to improvement of quality and better performance by students. Such a system should enable the teacher to perform the variety of roles expected of him. The role of the teacher is crucial in regenerating the educational system. The major question is how to create conditions in which the teacher will be able to put in his best and how objectively his performance can be assessed eliminating prejudices. A well conceived staff development programme and a reward system should be part of PAS. There is an urgent need for introduction of such a performance appraisal scheme.

The NPE states that "a system of teacher evaluation will be created and reasonable opportunities of promotion to the higher grade provided. Norms of accountability will be laid down with incentives for good performance and disincentive for non-performances".

Teacher Performance

The performance of teacher in an institution depends upon the physical facilities available in the institution, organisational climate for creative work, staff development programmes, selection policies and the system of rewards and incentives. The competence of the individual, knowledge, commitment and attitude towards work should be able to find expression in the environment in which he is working.

Performance of an individual is a match between the competence and the opportunity available to translate his competence into creative work. However, the institutional situation remaining the same, a relative understanding of the performance of different teachers may be possible by PAS.

The institutions in our country/are working under varying conditions and at different levels of infrastructural facilities. They can be broadly classified as under:-

- Institutions very much deficient in physical facilities and improvement of quality is almost impossible without minimum level physical facilities

- Institutions where minimum facilities are available but the processes involved are defective. Additional input may not improve the situation much without improving the processes.

- Institutions where trained teachers and physical facilities are available but institutional climate for creative work, team work, setting goals of development and planning and management of education etc.are to be strengthened

- Institutions where physical facilities and organisational climate are available

Since the teachers are working in different situations and conditions, assessing on a common yardstick may not do justice to the teachers. The improvement brought about in their own environment and the effort each one is putting to bring about improvement in the situation may be a better measure of the capabilities of the teacher. Usually evaluation is based on performance of the students in the examinations. But the examination result is dependent on the process the students were subjected to earlier, the opportunities for professional improvement of the teacher,etc..Results in the examination or improvement in the examination result brought about can be one of the factors of assessment.

Development of teachers' incentives and rewards, and opportunities for development of their competence are important for successful implementation of PAS. Rewards in terms of recognition and appreciation of good performance and honouring a dedicated teacher can also be an incentive.

4. The Proposed System

4.1 Objectives:

The objective of the PAS is enhancement and development of professional competence of the teacher which will serve the larger interests of the teacher, the student and the institution. The NPE recommends that the performance appraisal system should be :

a. Open
b. Data Based and
c. Participative

It should also be development oriented and simple in operation.

4.2 Can Teaching be Evaluated ? :

Often a doubt is raised as to whether it is possible to evaluate good teaching. In research, the candidate prepares a paper or a thesis based on the data he has collected. All these are presented as evidence in support of his work and conclusions. It is open to others to differ from him and question the evidence and data presented by him and suggest other methods and offer suggestions and criticisms. The same procedure can be adopted in the assessment of teaching as well. The teacher can produce any material or data as

evidence in support of his work as a teacher. The materials can include course plan, handouts, audio-visual aids developed or used, publications, results in the examinations or any other material the teacher would like to produce as evidence. His superiors and colleagues can study the data and evidence produced and offer their comments, suggestions and criticism. The data and information collected from students can be supporting or corroborative evidence. The data collection may be on the following points :

a. What was the plan of action
b. How much of the plan could be implemented
c. What are the result of his work plan
d. What do others think about it

4.3 Multiple Role of the Teacher

Every report on education has emphasised the multiple role the teacher is expected to perform. Some of these roles are listed below and the teacher can be assessed on these major spheres of work:

a. Teaching in classroom situation
b. Preparation of reading materials, handouts and publications development of laboratory tests, etc.
c. Innovative practices in educational process

d. Extension work and building a bridge between community and institution

e. Participation in the management of education and student services.

Individual Work Plan

The NCT report recommends that it is necessary to maintain a continuous record of a teachers work - teaching, research, development of reading material, extension and administration. The report recommends that :

1. Every teacher may be requested to prepare an annual plan of his work and submit it to the Head of the institution before the year commences and may also be circulated to the students as well.

2. Maintenance of record of the all sided contribution of teachers: this can be done most effectively by the teacher himself. It is suggested that every teacher should maintain a register in which he records his activities of each working day.

3. It is the responsibility and duty of the head of the institution to monitor the progress of work in terms of the time frame provided by the annual plan.

The above recommendations can be used with advantage. A teacher may ask for assessment in any or every one of the roleslisted earlier. He is being assessed with reference to his own work plan submitted at the end of previous year and also on the report of implementation of his work plan at the end of the academic year. The feed back information can be collected from students also about the implementation of the work plan and the benefit they have derived from it. The data collected from students may be for corroborative purposes rather than evaluative purposes. The questionnaire may be framed accordingly. The teacher may evaluate himself. The Head of the institution on the basis of the work plan and its implementation strategies submitted by the teacher, the corroborative data collected from the students, and his own assessment and understanding may rate the teacher in the form given in Appendix I.

The inspector on the basis of available data and on the basis of the assessment may also record his rating. Ratings by the peer group can also be considered wherever it is possible.

Weightage

The different tasks to be performed by the teachers are not of equal importance. The varied talents of the teachers are utilised for the development of the students and improvement

of the institution. The primary task of the teacher in the school system is effective teaching and a weightage of 40 percent for teaching, 20% for preparation of reading/material and 15% for innovative/work, making a total of 75% weightage to academic activities and the balance for other type of activities. The weightage given to different activities is only a suggestion and will have to be discussed widely before accepting it. Periodic review of the weightage may also become necessary. A schematic arrangement of the PAS system is given below:

Formulation of Institutional Goals and objectives

Formulation of Individual work plan

Work plan and data collecting from teacher about implementation	Data collection by Head of the Institution about implementation	Data from students about effective implementation of work plan

Rating by the teacher

Rating by peers if attempted

Rating by Head of Institution

Rating by Inspector

The rating from each task to be transferred to the work plan of the individual (Appendix I), self-rating and ratings by others are entered in appropriate columns. The

aggregated rating will have to be arrived at by multiplying each rating by the weightage assigned to the task, thereby computing the weighted average which will be the rating assigned to a teacher in a particular year.

Within each institution PAS Committees may be constituted to advise the Head of the institution on actions related to rewards and staff development programmes.

Incentives and Rewards

The PAS is for improving the performance of the teachers for the purpose of promoting the quality and excellence in education. Incentives and rewards for good performance are essential for motivating the teachers. At present a limited number of state and central government awards are the only recognition the teachers get. A large number of non-monetary rewards like recognition of good performance and honouring dedicated teachers are to be introduced. Best teacher of the school for the year should be rewarded suitably and monetary rew atleast for the best teacher of the institution is very much desirable.

Performance appraisal of the Head of the Institution and other Officers

All the officers concerned with the educational process should be evaluated objectively by suitable methods.

The role to be performed by the heads of institutions and district officers will be different from that of the teachers. The teaching role of the head of the institution may be evaluated in the same way as other teachers. Leadership role, management capacity etc, are to be assessed separately.

Strategy for Implementation

The introduction of a system of performance appraisal for teachers is an important step, and state and central government should be committed to it. State level and national level workshops are to be organised for improving the proposed scheme. The teachers' organisation should also be involved in the discussion for better acceptability. The scheme with improvements suggested by national workshops should be tried in selected institutions. Orientation programmes for the staff of these institutions are to be organised. Data to be collected from these pilot trials can be utilised for improving the scheme and for avoiding mistakes. The scheme can be extended to more areas as well as gain more experience.

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APPENDIX -I

WORK PLAN

Name____________________Designation______________School__________

Role	Tasks	Period of Activity	Team Members	Welfare	Apraisal rating: Self	Apraisal rating: Head of the institution	Inspection	Aggregation
1.	2.	3.	4.	5.	6.	7.	8.	9.
1.Teaching	1.1			40				
	1.2							
	1.3							
	1.4							
2.Preparation of teaching material etc.	2.1							
	2.2			20				
3.Innovative practices	3.1							
	3.2			15				
4.Extension Work	4.1							
	4.2			10				
5.Participation in Management	5.1							
	5.2			10				
6.Any other important work	6.1							
	6.2							

Individual — Head of the Institution — Inspector

APPENDIX-II

PERFORMANCE APPRASIAL FOR CLASS ROOM TEACHING

By students - anonymous

0. Never 1. Rarely 2. Sometimes 3. Frequently 4. Alwavs

S.No.	Item	Rating Scale 0	1	2	3	4	Remarks
1.	Communication effective						
2.	Chalk board work systematic						
3.	Student interest maintained						
4.	Course work completed according to plan						
5.	Homework/assignment, examined and resumed within reasonable time						
6.	Engages classes punctually						
7.	Questionsposed in the class						
8.	Students froo to raise doubts						
9.	Teaching methods effective						
10.	Student participation in classes ensured						

APPENDIX-III

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PERFORMANCE APPRAISAL FOR CLASS ROOM TEACHING

To be used by self/peers/experts

0. Very poor 1. Poor 2. Satisfactory 3. Good 4. Excellent

S.No.	Item	Rating Scale 0	1	2	3	4	Remarks
1.	Teaching method effective						
2.	Students attentive						
3.	Rapport with students						
4.	Content broken into small bits to enable students to learn step by step						
5.	Students asked doubts						
6.	Teacher asked questions						
7.	Did the replies show clarity of understanding						
8.	Students interest sustained						
9.	Home work assessed regularly						
10.	Guidance given for improving understanding						
11.	Communication effective						
12.	Planning of the lesson done						

F. ST/E12

NATIONAL SYMPOSIUM

TITLE OF PAPER: "POSITIVE PROCESSES OF LEARNING AND DEVELOPMENT IN CHILDREN -- AN EXPERIMENT WITH ELEMENTARY AND SECONDARY TEACHERS"

Narendra Singh*

INTRODUCTION

The one area of science that has long been considered to hold the key to child centred education is the psychology of learning and development. It is said that learning is basic to the development of a child. It can make him a athelete from a fragile structure, can produce the miser and the philanthropist, the bigot, and the patriot. In short, learning influences a child's life at every turn, accounting in part for the best and worst of human beings. All the above is intended to show that some very firmly established personality characteristics and character are by and large based on learning and patterns of development at earliest stages of children's growth. In and out of school, learning and development are the major forces in almost every aspect of human life.

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A child's learning depends on maturation and maturation is an important concept in development. It, in conjuction with teaching, is the key to learning. The teachers need to know when there is sufficient maturation for teaching certain concepts. Not only do the rates of development vary from child to child but there is inter-relationship between different aspects of development. Intellectual development is affected by physical development, for example, a child cannot learn to write untill he has acquired the motor skill to hold and manipulate a pen or pencil. Learning and development go together and both are continuous processes and the understanding and the application of their positive processes in actual class room setting can play a significant role in child centred education.

NEED :

Our hope has been that with the development of a science of learning, the children would be able to learn and develop more in less time than was ever possible in the past. Unfortunately, it could not be done, partly due to the inadequacy of the teacher involved in the management of class room setting because a teacher teaches a subject and

not the child. His teaching is subject and curriculum centred and not child centred. A teacher uses the traditional techniques of teaching including corporal punishment. He neither pays any attention to individual differences that exist among children nor to variety of content and subject. A teacher is confined to a textbook only and insists on serial reproduction and recall and has practically no idea of the child's make-up. He paces learning according to his own convenience and gives hardly any feedback. The teacher does not act as a inhibiting person. Moreover, teacher training curricula does not include clear practices of teaching and learning based on well known scientific practices included in classical conditioning, operant conditioning, problem solving and insight learning. A traditional teacher's teaching includes many arbitrary and stereo_typed practices such as emphasis on rote learning, which is unscientific and also harmful for child's learning.

Realising that the child is the centre and the pivot of education and teachers are unable to give him maximum benefit, National Policy on Education (1956) especially emphasises investment in the development of the child and improvement of teacher's training. Recognising

the holistic nature of child viz. physical, social, mental and emotional, child's education is receiving and will further receive high priority. A new thrust on elementary education has emphasised the improvement in the quality of education. Preservice and in-service training has been made mandatory for teachers and adequate training reserves are under the provision to promote efficiency and effectiveness of the teaching staff.

OBJECTIVES:

The training programme fulfills the following objectives

1. To acquaint the teachers, teacher-educators and educational authorities with various aspects of child's personality and their relevance for effective teaching-learning.

2. To enable them to understand the factors that inbihit or facilitate learning and development.

3. To improve existing practices at elementary and secondary level to facilitate learning.

4. To enable the elementary and secondary teachers help solve different problems-educational or psychological related with learning and development of children.

5. To help teachers to study specific problems and to suggest solutions for further research.

6. To evolve a nucleus of learning and development experts to extend and propogate teaching learning strategies.

7. To bring about qualitative improvement in child centred education through teaching-learning process.

COURSE CONTENT :

1. An elementary level course covering development during 6-11 years and a secondary level course focusing on adolescent period.

The emphasis is mainly on how development from early stages to adolescence has relevance for effective teaching and learning. All kinds of learning - verbal, motor, physical, emotional and social are covered.

2. Learning programmes and strategies for teaching course content at the primary and secondary school level are discussed.

3. Principles of associa'ion learning, verbal, behavioural, operant and classical conditioning and insight learning are discussed.

4. Motivation and Reinforcement.

5. Socio-cultural factors affecting learning.

6. Some problems of classroom behaviours related with learning are discussed such as study-habits; reading-writing, discipline, copying etc.

Based on the course content, there are some of the positive processes for better learning which the teachers should keep in mind for class-room teaching and organising learning activities. In brief, these are discussed in the following pages.

1. Age:- Age plays an important role in learning. A child taught music at an early stage of growth learns better than the adult or old. Language and arithmetic are learnt easily by the child. Some psychologists contend that after a certain age it becomes difficult for a person to learn. Thorndike's experiments have established that mental development does not stop at the age of 16 or 18 years. The power of learning is on the increase upto the age

of 23. The progress seems to be halting after 40. Thorndike, on the basis of certain experiments says that up to the age between 18 and 20 the learning proceeds rapidly and remains stagnant till the age of 25 and a slow decline sets in thereafter continuing upto 35, and its speed gets a bit accelerated upto the age of 45 and beyond.

The causes as to why the learning ability declines with the growing age have not been correctly ascertained. Some of the reasons that the psychologists advance to explain this phenomenon are : defective working of nervous system, lack of enthusiasm, mental fatigue and aversion.

Till late, many people regarded childhood as an ideal age to learn and memorise new things. This belief has, however been refuted by recent experiments. There is no age in one's life when one becomes unfit for further learning. It may be that speed of learning at one time may be better than at the other. Children's minds are not burdened with worldly problems and they possess more flexible nervous system . Therefore, they learn some of the school subjects more rapidly than the adults can do. Learning tends to be dynamic and can be started at any age in life.

The idea that mental capacities are determined by rigid age-related limits is not supported by evidence. Take, for example, 'stage' theory advanced by Piaget. According to this theory, the structures in the brain underlying the mental operations which are necessary for reasoning, learning, and solving problems advance through a series of stages. That is to say, developmental change occurs in steps like moving up a staircase as opposed to proceeding along a steady upward slope. According to some developmental psychologists, a child's achievements are limited by the stage he has reached.

Opposing this view is a large body of evidence showing that young children can learn many things without being within age - related limits called stages of development. Charles Brainerd(1977) and Margaret Donaldson (1978) advance the evidence which is against the Piagetian concept.

Although the contribution of Piaget to our understanding of child development is still very highly regarded, many psychologists now believe that the progress of young children with regard to learning and other mental processes is not so

closely linked to fixed stages as followers of Piaget have claimed. Thus age is an important factor for better learning and not a rigid limit for it.

2. Physical and Mental Health:- It is necessary for a child to have good physical and mental health for better learning. If the health is poor, the senses will not function properly. Ill health kills interest in learning and the learner is tired easily. Some psychologists hold the view that a child of average intelligence learns proportionately more than the one with sharper intelligence. The reason is that the class teaching is arranged in accordance with the needs of average students. So the students with sharp intelligence have little interest in them. Stevenson, Parker and Wilkinson (1975) and Jenson (1978) also noted that the correlations between intelligence and learning were very low (+.14). The reason is that one kind of learning may have less success on the other forms of learning. Playing football and programming computers are two skills that depend heavily on learning. But

being good at one does not lead to high levels of performance on the other skills. Therefore, intelligence as well as soundness of physical and mental health of the children should be given due consideration in organising learning activities.

3. Environment:- Environment affects learning to a great extent. If the school is situated in a dirty environment with a lot of noise and no provision for fresh air, children will be in no mood to learn. That is why schools are set up in open places. Otherwise for want of requisite amount of oxygen, mind gets tired and one feels dull and drowsy. It One finds studying difficult in hot weather. Therefore study hours are reduced during the summer season. A factory or cinema in the vicinity of the school may also spoil the atmosphere. Although it is true that children's learning is influenced by the outside environments, yet their learning may depend on many other factors which are concerned with individual development such as perceptual sensitivity, personality, temperament, and family background - especially mother's interaction.

4. Practice/Rehearsal/Repetition/Revision/Drilling:- In order to make satisfactory progress in learning, it is necessary to practise the material to be learnt. The time for practice should be neither too long nor too short. It has been established by experiments that half an hour is the ideal time to be given for maximum benefit. Mind does not get tired with-in this span of time. Some persons suggest daily exercises of short duration. Without proper practice, things learnt once can not be retained permanently. Rules of grammer for example should be practised in Essay writing. The time devoted for practice depends on age, subject and method of learning which a learner adopts to fulfill the target.

5. Interest:- Interest is another factor in learning. Nothing can encourage the child if he lacks interest in the subject. An internal urge for learning is necessary. It is this urge which activates a child to attain the goal. The interest of a child is related to his desire and aim. The teacher, therefore should ascertain the interest and ability of a child prior to planning his instructional strategy.

6. Comprehension:- The ability to learn from written materials is among the most important of all the skills taught at school. There are close ties between learning, reading and comprehension or understanding. Existing knowledge is most important for a learner because it helps him to understand new material. It is also proved by experiments that meaningful material is easily learnt than non-sense syllables or unmeaningful material. Learning becomes easy, effective and permanent when the learner proceeds from known to unknown. Whenever students fail to understand the material to be learnt it becomes the duty of the teacher to explain and remove the difficulties and help in the comprehension of the material (prose, poem, arithmatic or any subject) to be learnt.

7. Motivation and Reinforcement:- Motivation is the key to successful learning and teaching, and without motivation - whether primary or secondary - learning does not take place. The primary drives of exploration, curiosity and manipulation must be guided along socially approved channels in order to reach a desired goal which is satisfying to the child.

The level of attainment required must be adjusted by the teacher to the individuals ability and levels of aspiration which are often related to the child's past experience of success or failure in school. Knowledge of result is important and should be given to the class as soon as possible; and in general rewards are most effective then punishment and help to establish a more stable emotional climate in the classroom. Success is essential and needs to be emphasised and not failure.

Study Habits:- A school going child should have good study habits in order to have better learning. Some of the important components of study habits are a definite purpose, proper place for study, favourable physical conditions to concentrate on mental activity, a definite time schedule, brief well organised notes, method of silent recitation and use of whole vs part method as per need, and the habit of summarizing and reviewing the learning material. The teacher should be well acquainted with the study rules. Only then can he give proper guidance in study practices to the children.

9. Audio-visual Aids:- The use of audio-visual aids is recommended in class room teaching because such materials are quite helpful in learning. They supply a concrete basis for conceptual thinking and give rise to meaningful concepts of words enriched by meaningful associations. Some of the important audio-visual aids are - radio, television, motion pictures, excursions, field-trips, tape recordings, news papers charts, and posters, and maps and graphs. Every good teacher should make use of these aids to benefit the learner.

10. Modern Teaching:- A teacher can facilitate better learning and benefit the children if he uses modern teaching techniques in class room situations. Teachers should always remember that bookishness is a thing of past. Now a days, the child is placed on the pedestal of glory. Instead of large classes, inadequate equipment, cramming for examinations and use of corporal punishment, the new methodology encourages small class room, teaching associative learning with a habit of summarising and reviewing the learning material, abeyance of corporal punishment, active perception, thinking and participation of learners in the

class room. The modern teaching-learning process emphasises the learner, guides the learner and promotes child's development. Modern teaching requires a high degree of flexibility and adaptability a: beyond the mechanical application of step by step procedures. A child must be actively involved in learning and it is the teacher's duty and responsibility to activate him.

METHODOLOGY:

The nature of the training courses organised for elementary and secondary teacher educators has been that of participatory one. That there is always an active participation and group discussion between participants and resource persons in class room. There are lectures on course content by resource persons followed by group discussions, practical work and assignments. Field visits and educational tours are also arranged. In the end, there is always an evaluation of the programme by the participants which is found useful for feedback and immediate follow up of the programme. The Department of Educational Psychology, Counselling and Guidance has been organising such short term training courses for the teacher educators in the

country ever since 1980-81 and is trying to cover the clientale in a phased manner.

PROGNOSTIC EFFECT:

In the follow up of the training courses participants have always expressed their satisfaction with regard to the course content, methodology, management, duration and utility of the program. The courses have been very popular and had to be repeated in a few states on demand from the field.

It is reported by the participants that during their teacher training many new ideas, concepts and techniques were not known to them. A traditional teacher without this knowledge feels inadequate. Such inservice training courses are in fact the need of the time and are essential for the improvement in teaching-learning in class room settings.

A manual is under preparation for elementary teacher educators on their demand which will act as a ready-recknor for them and benefit the child.

CONCLUSION

Our teachers are inadequate to give maximum benefit to the child. Their teaching is curriculum centred rather than child centred. Defective teaching methods have a

direct bearing on Child's learning and development and results in failure, under-achievement, copying, dropout, wastage and stagnation and day-to-day disciplinary problems. Therefore, teachers need improvement in their knowledge and teaching-learning strategies to be applied in actual class room settings.

Our long experience of working with teachers, teacher-educators of primary and secondary level is with regard to the inadequacy and inappropriateness of their standards and teaching methods. Teachers need continuous training to update themselves. Teacher education, therefore, will remain a continuous process in future in order to bring improvement in child-centred-education.

NATIONAL SYMPOSIUM

TITLE OF PAPER : APPLICATION OF BEHAVIOUR MODIFICATION TECHNIQUES IN ELEMENTARY SCHOOL/CLASS ROOM SETTINGS - AN EXPERIMENT

S.P.Sinha*

Introduction

National Policy on Education (1986) has emphasized that Child-Centred and activity based process of learning should be adopted at the elementary stage. It has recommended that the child-centred approach should build the academic programmes and school activities around the child. By making elementary education child-centred, we would be introducing a long awaited reform in educational system. The most important aspect of this reform will be to make education a joyful, inventive and satisfying learning activity rather than a system of rote and cheerless authoritarian instruction. Behaviour modification techniques which evolved from the principles of learning particularly from classical and operant conditioning are powerful techniques geared towards individualizing classroom instruction and making it child-centred.

In activity based learning, teachers are expected to generate relevant activities for individual child which are relevant for effective academic achievements, general,

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personal, and social development, growth of national integration, formation of moral and value based character, formal development of skills needed to make individuals productive and useful citizens.

Behaviour models of learning and instruction have their origins in the classical conditioning experiments of Pavlov (1927), the work of Thorndike on reward learning (1913), and studies of Watson and his associates, who applied Pavlovian principles to the psychological disorders of human beings. The impetus for these recent applications comes primarily from the publication of two works: B.F. Skinner's Science and Human Behaviour in 1953 and Wolpe's Psychotherapy by Reciprocal Inhibition in 1958. Skinner argues that human behaviour can be understood in terms of the principles of operant conditioning, and Wolpe stresses the role of classical conditioning in changing human behaviour. Wolpe's influence also stems from his descriptions of specific therapeutic procedures for dealing with human problems (for example, in systematic desensitization).

With the development of Skinner and Wolpe's works, educators began to employ behavioural techniques in school settings. For some types of learners these are standard procedures. Autistic and retarded youngsters who previously had made no progress in language development and social learning

are now trainable, and in some situations, they are able to mix with so-called normal individuals. Milder forms of learning problems also have yielded to behaviour models.

There has been an impressive amount of research demonstrating the effectiveness of behavioural techniques with-a wide range of problems, from snake phobias to social-skills deficits, behavioural problems, and test anxiety. It also indicates that these procedures can be used effectively in group settings and by lay people. We believe that behaviour theory presently offers many procedures that are extremely useful to school teachers.

Behaviour modification is a process in which some observable behaviour is changed by the systematic application of techniques that are based on learning theory such as operant and counter-conditioning. According to the principle of operant conditioning, once a behaviour has been manifested the probability that it will occur again can be strengthened or decreased by additional responses in the environment. Thus, if a small child sees a chair in the room (stimulus) points to it and utters the word chair (response behaviour) the child is responding to external forces. If after saying the word chair, the child's mother, gives a kiss or toffee and repeats 'chair' that is alright (reinforcing stimuli), the child is likely to say this word again (response behaviour).

This example illustrates the basic behavioural notion that behaviour is acquired through external variables that serve either as the original stimulus or as the reinforcing stimulus. Thus behaviour can be accounted for in terms of the external variables. If the preceding conditions (original stimulus) or reinforcing conditions can be changed then behaviour can be changed.

The principle of counter-conditioning is slightly different: in counter conditioning, a new behaviour that is incompatible with the old behaviour is substituted, such as relaxation for anxiety. From behavioural point of view, learning means bringing behaviour under environmental control. Learning to play the harmoniam (the behaviour) is under the control of the printed music (the stimulus).

Behaviour modification differs radically from traditional psychodynamic thought because it concentrates on the behaviour itself, and not on some underlying cause inaccessible to modification. Practitioners of behaviour techniques have devised several ways of observing and measuring behaviour which can be used by most teachers. They are of the opinion that maladaptive behaviours are learned behaviours and these can be changed by manipulating the stimulus conditions in the environment (operant principles) or by substituting the behavioural response (counter-conditioning).

The application of experimentally established psychological principles to the altering of responses is called behaviour modification. It is concerned with the variables that are currently maintaining the subject's behaviour and these behaviours can be altered. Probably the greatest advantage of behaviour modification is that it does not require a one-to-one relationship between the behaviour modification who establishes the procedure and the subject. The behaviour modifier can train teachers to carry out program in class room and parents to implement the program in homes to deal effectively with children. They can also train individuals to alter their own behaviours. Many of the procedures can be utilized by a single behaviour modifier on large groups of people at one time.

Need of Behaviour Modification in school/class-room settings:

The behavioural problems of children generally lead to disturbance in the classroom climate and deterioration in overall academic routine of the school. Darwin Dorr, a noted behaviour modifier points to the evidence that some form of emotional behaviour maladjustment exists between 30% to 70% of the school children and these problems may continue to adulthood if not treated or corrected in the early years (Darwin, D, 1972).

The role of teachers is not merely to transmit a body of knowledge and skill prescribed in the curriculum but also correct maladjustive behaviour and develop desirable values and attitudes. Information available in the area of behaviour modification is likely to be of great use to classroom teachers. Qualified behaviour modifiers are in very short supply. Hence, there is need for making classroom teachers aware of the theory and practices of behaviour modification techniques in the classroom settings.

New and inexperienced teachers in the beginning feel diffident as to how they can control their classroom and behaviours of the children assigned to them. It is quite likely that the methods and techniques they use in trying to manage these children may in fact turn out to be a case where they actually are encouraging undesirable classroom behaviour without knowing or by accident. Through proper training and supervised practices in applying behavioural techniques, the teacher may gain or regain control over children.

In the teaching learning situation the most important role is that of elementary school teachers. They have a key role in forming and shaping the behaviour of the children. Teachers and teacher-educators do not work as stimulator and also they know little about stimulations and responses. It is

also widely believed that poor achievement, wastage and stagnation of elementary school children are due to the fact that teachers are quite unaware of the scientific techniques of behaviour management of the class-room situations.

These shortcomings can be overcome by orienting elementary school teachers in the principles and techniques of behaviour technology in general and behaviour modification techniques relating to classroom management in particular which will make teaching learning situation of the elementary level more effective and motivating.

For the purpose of wholesome development of youngsters, an orientation programme in the techniques of behaviour modification has been undertaken by the Department of Educational Psychology, Counselling & Guidance. Through this programme knowledge and skills of behaviour modification techniques are extended to the elementary teacher educators, who are vitally involved in the pre-service and inservice training of elementary teachers.

Objective:-

To start with, behaviour modification courses were conducted for higher level personnel drawn from university departments of Education and Psychology. Later on, it was proposed that this course should be extended to the elementary

level teacher educators. Since no such courses were ever undertaken by any educational institutions of the country it was felt that exposure to such programmes at elementary level was needed particularly to tackle the problem of maladjustive classroom behaviour of children and the alarming rate of their drop-out and stagnation.

The courses for elementary teacher educators were started in the year 1983-84 with the following main objective:

"To train elementary teacher educators as resource persons at the State level who may organise training courses for elementary school teachers in the application of behaviour modification techniques in their respective command areas."

Target Group:-

(A) To orient 25 to 30 elementary teacher educators of each state who may have attended the Enrichment Course on Learning and Development conducted by Department of Educational Psychology, Counselling and Guidance or have requisite information in basic principles of learning and reinforcement in a ten day course in the application of behaviour modification in school and classroom settings.

(B) To organise two courses in a year in two different states with a view to cover all the states in course of time.

Contents of the Training Modules:

Participants have been introduced to a variety of learning experiences through theory lectures and imparted extensive training in the following aspects of behaviour modification techniques.

(A) Accelerating Desired Behaviours

Behaviour modification is a process in which some observable behaviour is changed by the systematic application of techniques that are based on learning theory and experimental research. It represents a collection of techniques that can be used by teachers directly in dealing with problem behaviours that are visible and concrete.

The procedures or techniques evolving from behaviour theory fall in to two general categories: those emphasizing the principle of operant conditioning (Skinner) and those using principles of counter-conditioning (Wolpe). Operant principles stress the role of reinforcement. Counter-conditioning emphasizes procedures for substituting an adaptive for a maladaptive response.

The term behaviour modification is used/referred to as contingency management. The relationship between the response and the reinforcement is called contingency and when contingency is controlled or managed, we have the process of behaviour modification.

Contingency Management

Contingency management, used as a basis for organizing the learning environment or for altering the behaviour of individuals, consists generally of the same procedures: (1) Selection of target behaviour (2) measuring of target behaviour (establishing baseline). (3) formulating a contingency management program; (4) instituting the program; and (5) evaluating the program.

Contingency management model is widely used with students who have major learning and behavioural problems. It is based on the operant principle that behaviour is influenced by the consequences that follow. For an operant or contingent relationship to be established reinforcing consequences must follow. If the behaviour is not reinforced, it will become extinct. A reinforcer is a consequence that increases the probability of a particular response. Desirable responses can be strengthened through both positive and negative reinforcements. A reinforcement is positive if its addition to the environment such as a smile, a praise produces the adaptive responses. A reinforcement is negative if its

removal from the situation following a response produces the desirable behaviour. Programs based on behaviour theory emphasize positive reinforcement, specifically discouraging the use of negative or aversive stimuli except in rare instances.

We know that for a response to be established, it must be followed by a reinforcement. Depending on the purpose, some reinforcement schedules are more advantageous than others. Continuous reinforcement is the application of reinforcement after every emission of the desirable response. Although, it is often inconvenient, continuous reinforcement is the quickest way to establish a new behaviour and is very useful in the initial learning phases. More than likely, reinforcement is intermittent, that is, it occurs reliably in relationship to the desirable response either after a period of time (interval schedule) or after a certain number of desirable responses (ratio schedule). Both types of intermittent schedules can be fixed or variable.

The categories of reinforcement that are used to develop or extinct children's behaviour are:

(a) Non-verbal reinforcers are like, hugging, kissing, smiling, showing expression of approval or disapproval etc.

(b) Social reinforcers are like good, correct, fine etc. Not all social reinforcers are verbal praise. Facial expressions such as wink, nearness to an important person who is sharing time and conversation; and physical contact such as walking arm in arm or sitting on teacher's lap are all rewarding.

(c) Material rewards can be consumable such as candy, toys, picture books, toffee, ice-cream etc.

(d) Activities reinforcers for children include going first, play time, recess, watching television, going around etc.

According to behaviour theorists, the most effective reinforcement immediately follows a response. Delayed reinforcement is much less powerful in modifying behaviour. Reinforcement is at the heart of the behavioural model, for without it behaviour (response) cannot be brought under the control of particular environmental stimuli.

Contingency management has many uses including reducing undesirable behaviours. However, this model, is also valuable in developing new behaviour such as academic-skill, social-skill and self-management skill. Finally, contingency management is effective in strengthening and maintaining existing desirable behaviour.

Contingency Contracting

The use of contingency contracting as a behaviour modification technique is based on a principle developed by David Premack in 1959. Premack's principle is: "A behaviour that has a high rate of occurrance can be used to increase a behaviour with a low rate of occurance." For example, the child is overactive and moving around. Teacher can ask the child to sit for a few minutes and then take him round. Here gradually the sitting behaviour gets reinforced, when it is followed by going round. Teachers use this principle all the time when they give students free time after completing their work.

The advantages of contingency contracting is that it is positive: that is the child takes an active role in deciding type and amount of work required. Consequently personal responsibilities are understood by the child.

Token Economy:

A token economy is a system of exchange in which tangible such as candy, toys, gold stars, stickers etc. are used for reinforcers in the class room. In the study of behaviour modification they are earned only after a series of previous reinforcers have been received. Children earn tokens that are exchanged for specific reward. Many children are not able to function appropriately, if they

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must wait an extended time for reward. In addition, there are some children who have not developed to the level at which social rewards alone are satisfactory reinforcers. In these cases, the use of a token economy has proved to be an effective behaviour change intervention.

The tokens are usually valueless to the children when originally introduced to them. Their value becomes apparent as the children learn that token can be exchanged for a variety of rewards, such as being first in the lunch time, getting 10 minutes of free time, listening to phonograph records, watching television and so on. This versatility makes the token system superior to most interventions.

In this manner, tokens become potent reinforcers. They can be awarded over a period of time for acceptable academic and non academic work. The system allows the teacher to structure the learning environment for positive reinforcement and to provide immediate feedback to the children via tokens. Hence, a moderately well run token exchange can promote direct learning regardless of the content of the activity.

The token economy has worked very effectively in the classroom. Two reasons for its success are its lack of emphasis on competition with others and the fact that the reward menu provides sufficient variety to prevent boredom.

Tokens have typically been used on an individual basis. Studies regarding their use for the entire classroom are rare. Tokens can be presented for various appropriate behaviour and with held for inappropriate and unacceptable behaviour. An important component of a token economy is the reward menu, which should be developed with the child or group.

Shaping:

Shaping is the procedure of reinforcing successive approximations to some desired terminal behaviour. For example, if a child answers in a class but only at a whisper, a teacher can praise the child when he answers with just a little more volume than usual. Later, the teacher can reinforce answers that are more closely approximate the desired terminal behaviour i.e. answering in a manner audible to both the teacher and to other students.

There are two distinct types of behaviour shaping interventions; progressive and chain. In the progressive shaping intervention, the child is required to engage in a series of steps, each of which is a continuation and progression of the previously learned step or steps. Example of this intervention are bathing, handwashing, putting on sweater or socks and so on.

A chain intervention is composed of two or more separate and distinct steps or skills that are learned and combined sequentially to complete a specific task. Examples of this intervention are tying shoes, polishing shoes, eating, buttoning, clothing and the like.

Children often need special assistance during the steps of the behaviour shaping intervention. This special assistance may be manual or verbal and frequently called 'prompting'. Prompts may include such activities as guiding a child's hand or foot in the completion of a task, moving the child's head to gain his attention, talking a child through a task by repeated precise verbal instruction and providing a verbal model for imitation.

Although prompts of various kinds may be a necessary component of the behaviour shaping intervention initially, they must eventually be eliminated. The gradual elimination of prompts is called "fading". Fading includes the reduction of the amount and quality of manual guidance, verbal assistance and printed or three dimensional material used to structure on activity.

Modeling:

In modeling, a child is exposed to one or more other individuals actually present (live) or filmed (symbolic), who demonstrate behaviours to be initiated by the child.

Modeling procedure serves three purposes;

(a) It helps the child to learn new appropriate behaviour

(b) It provides the child with opportunity to behave in a socially approved manner.

(c) It decreases, fear, and anxiety in the child.

The procedures associated with modeling rely heavily on other principles of behaviour theory such as reinforcement and successive approximation. It is in rare instances that totally new behaviours are acquired by modeling. For instance, in the treatment of total absence of language skill in some children, the modeling technique would be very effectively used to acquire language facility. In this, model performs the desired behaviour (making a sound of 'oh') and guides the subject's performance, by shaping the mouth into a certain shape for the production of 'oh' sound. When the child approximates the modeled behaviour, he is given a reward and thus the desired behaviour is reinforced. However, in certain cases the children though capable of a particular behaviour, refrain from indulging in it due to (a) fear (b) anxiety (c) the behaviour being weakly established and (d) due to the punishing consequences of the behaviour which had led to non-performance. In such cases, the desired behaviour should be facilitated by modeling. For instance, when a child is not able to mix with other children and remains aloof, introduce a situation with a model child to a group

of children. Reinforce the model child. Observation of this situation would facilitate the movement of the child who is withdrawn. It is usually better to expose extremely fearful children (phobic) to models who perform the same behaviour fearlessly.

(B) Decelerating Undesirable behaviours

There are three basic ways of decreasing the frequency of undesired behaviours: (1) extinction-arranging that no reinforcement is contingent on the undesired behaviour. (2) Punishment-arranging that an aversive event is contingent on the undesired behaviour and (3) Time out.

Extinction

The discontinuation or withholding of the reinforcer of a behaviour that has previously been reinforcing it is called, extinction. This technique is most frequently used to reduce crying or temper tantrum etc. Normally the parents present desired objects or pay attention when children cry or show prolonged emotional behaviour. This serves as reinforcers to undesirable behaviour and it gets strengthened. To extinguish such behaviour children are left to emit undesirable behaviour such as crying or temper tantrum without reinforcing him that is by not lifting the child. The child is neither given his desired objects nor any attention paid to him following his undesirable activities. This strategy extinguishes the undesirable behaviour.

<u>Punishment</u>

It is an intervention used to decrease or eliminate an unacc[illegible] behaviour. There are two distinct forms of punishment that the practitioner can consider for application with students. As commonly applied by parents and teachers, punishment is the addition of an aversive stimulus as a consequence of an unacceptable behaviour. Punishment of this form can be either physical or psychological. Examples are a spanking (physical punishment) or a scolding, extra work, after school detention, or an undesirable additional task (psychological punishment).

The other form of punishment is the substraction of something the child perceives as desirable. Examples are the taking away of television privileges, late bed time hours, freedom to leave the house, or tokens or points.

The substraction of previously earned tokens or points in the token economy intervention is called response cost. In this situation students are informed that not only can they earn points for previleges and goods but if they exhibit specific unacceptable behaviours, they can lose points. A specific number of points are substracted from the total for each transgression. In a word, the children are punished for exhibiting specific unacceptable behaviour.

Punishment by deprivation or response cost is generally considered less harmful to the child and a more effective intervention than the addition of physical or psychological aversive stimuli.

Punishment tends to suppress the undesirable behaviour rather than extinguish it. This suppression is of short duration and frequently the behaviour recur in the absence of the punisher. It has been found that when a punished behaviour recurs, it usually does so at a rate higher than before the punishment was originally inflicted. In some cases punishment causes severe emotional problems. Punishment, especially harsh physical and psychological punishment should be a last resort if it is used at all.

Time out:

Time out is the removal of a child from an apparently reinforcing setting to a presumably non-reinforcing setting for a specific and limited period of time. This is a technique employed to decrease maladaptive behaviour and one that is often associated with terms such as isolation and seclusion.

The effectiveness of time-out as an intervention is contingent on these factors:characteristics of the individual child; teacher's consistant application of the intervention: child's understanding of the rules of time out;

characteristics of the time-out area: Duration of time-out: Evaluation of the effectiveness of the intervention.

A teacher must know the characteristics of the individual child before implementing a time-out intervention. For the acting-out, aggressive, group-oriented child, time out may be very effective. Such children want very much to be with the group and attended to by the teacher. Consequently, time-out area is not a rewarding place for these types of children. However for a withdrawn, passive solitary child who is prone to day-dreaming, the time-out may be rewarding and this intervention should be contraindicated. These children may engag in their own little world while in the time out area.

If time-out is to be applied as an intervention with a particular child, it must be utilized with consistency over a predetermined period of time. Frequently, teachers are inconsistent in their application of time-out. As a result, the child becomes confused and the target behaviour is unwillingly reinforced.

Children should know specifically what behaviours are not acceptable in their classroom. In addition, they should know the consequences for exhibiting the forbidden behaviours. If time-out is to be used as an intervention, the rules for time out should be communicated to the children. The rules will assist the teacher in trying to remain consistent and fair in the application of the intervention.

Care must be taken in the selection of time-out area. Teacher should avoid selecting an area that may appear non-reinforcing but is in effect reinforcing to a particular child. For instance placing a child in the corridor for time-out may be extremely reinforcing as the child has an opportunity to communicate with every one who passes. Another commonly used but ineffective area for time-out is the principal's office. In the office, the child has an opportunity to observe parents, and anxious administrators in their natural human state. In addition the child has opportunities to pick up the latest school news and gossip for dissemination among peers and teachers.

The area selected should be (a) away from high traffic (b) away from doors and windows (c) out of the other children's view and (d) within view of the observer supervisor.

Time-out loses its effectiveness as an intervention if a child is left in the setting for too lengthy or too brief a period of time. Four to five minutes in time-out should be maximum except under extraordinary circumstances. A child should not remain in time-out for more than 10 minutes.

(C) Counter-Conditioning:

Joseph Wolpe (1969) proposed the principle of counter-conditioning to substitute responses so that maladaptive ones are inhibited by adaptive ones.

Desensitization:

Desensitization, the process of systematically lessening a specific, learned fear or phobic reaction in an individual became a popular therapeutic techniques in the second half of the 1970's.

As indicated by Wolpe, the process of desensitization has been demonstrated to be effective when applied to individuals with fear and anxieties related to school attendance, participation in large group, water, animal, heights, flying, test taking and the like.

The process of systematic desensitization according to Wolpe, involves three steps:

(A) Training the subject in deep muscle relaxation.

(B) Constructing an anxiety-evoking hierarchy of stimuli.

(C) Counterposing relaxation and the anxiety-evoking stimuli.

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Very encouraging evidence of the effectiveness of desensitization in groups has been received. These studies included desensitization for spider and height phobias as well as interpersonal anxiety and test situations. Obviously the possibility of conducting desensitization with groups of students makes the technique much more practical for teachers.

In order to apply desensitization in the classroom, the following conditions must exist:

(i) The teacher must have positive interpersonal relationship with the child. The phobic child must trust the teacher and be free to express fears in the teacher's presence.

(ii) The teacher must construct an anxiety evoking stimulus hierarchy,

(iii) The teacher must be allowed (and have adequate time) to accompany the child in the progression from the least to the most anxiety-evoking stimulus in the hierarchy.

Under normal classroom conditions the desensitization process is time consuming.

The following steps may be adopted for a child having school phobia (extreme fear of coming to a school).

(a) Take the child to a certain distance towards school everyday.

(b) Gradually increase the distance from day to day.

(c) Lastly take him nearer to the school.

(d) Finally send him into the school and keep him there for sometime.

(e) At every above stage, create a pleasant experience for the child by telling him story, giving him eating items or showing him picture books.

Thus this technique can be used to reduce mild phobias in children.

Methodology:

The orientation programme is mainly for elementary teacher-educators and is designed as a participative one. Participants are exposed to understand the nature and concept of behaviour modification and then imparted extensive training in the application of different techniques of behaviour modification (mentioned above) in class room settings. In order to communicate the concept and techniques of behaviour modification with the participants various teaching techniques are utilized. Some of these are lecture-cum-discussion, lecture-cum-demonstration, group activities and assignment and actual application of these techniques of behaviour modification in school settings.

This course is relat d to deal with behavioural problems and teaching learning situations of elementary school children. Field visits a [illegible] to different local institutions or schools in order to demonstrate case study of the actual classroom situations to the participants for their first hand experience. Some slides related to application of some behavioural techniques are also screened.

Achievements:

Since the year 1983 this training course has been started, eleven States of the Country have been covered so far and about 250 elementary teacher educators have been trained in the application of behaviour modification techniques in class room settings.

Follow-up action:

Participants ([illegible] [illegible]ators) of the Course have been requested to inform the Department of Educational Psychology, Counselling and Guidance periodically about the action to be taken by them in line with their proposed plan of action and extension of the programmes in their respective command areas. They have been told that NCERT will support all kinds of academic help required by them from time to time or whenever they are in need of it. At the same time they have been also requested to approach principal of the Training Institution, Director SIE, SCERT or SIERT to provide necessary support and facilities for the implementation and extension of this programme in their respective command areas.

In the evaluation sheets, they have given positive comments about the programmes and have expressed that this kind of orientation will certainly help elementary-teachers in handling the students and their behaviour in the school and classroom situations and thereby they may be able to correct unhealthy, objectionable, maladaptive and undesirable behaviours of the students and ultimately students will achieve better.

Participants of many States have taken initiative in this direction and they have reported that this kind of orientation in the principles and techniques of behaviour modification relating to classroom managements have made the teaching learning situation of the elementary level more effective and motivating for students.

In this connection it will be worthwhile to mention here that final draft on "Development of a manual instruction for teachers and teacher-educators at the elementary level on Behaviour modification techniques in class-room settings" is ready. The printing work of the manual will be undertaken only after the final approval of Editorial Board for its wide publication. The printed manual will encourage teachers at elementary school stage to apply principles and techniques of behaviour modification in the class-room teaching learning situations. This manual will serve as a ready-reckoner for the elementary school teachers.

Functional Utility of the Course:

Elementary teachers have a key role in forming and shaping the school and later behaviour of the children. It is also a fact that poor achievement of elementary school children is by and large due to the reason that teachers are quite unaware of the scientific techniques of behaviour management of the school and classroom situations. Hence, a great need was felt to impart information on various principles of learning applied to school and classroom situations and also inform on specific techniques that come under the area of behaviour modification specially various techniques of reinforcement. Taking into consideration of all these, elementary teacher educators are being oriented in the principles and techniques of behaviour technology in general and behaviour modification techniques relating to classroom management in particular. Then teacher educators in turn, will act as key persons and organise such courses to orient these principles and techniques of behaviour modification for the elementary teachers in their respective command areas. When they will apply these principles and techniques in the management of the children in the school and classroom situations, it will make teaching learning situation at the elementary level more effective and motivating fot the students. Making a school an attractive place for children who want to come and stay is important. Part of the drop-out and wastage and stagnation among elementary school children can be possibly impeded by the application of these techniques.

The relevant orientation to the teachers in respect of behaviour management of the children in the school or classroom situations is the greatest need of the hour. Through this, teachers will come to know the recent techniques and by the exposure of these techniques students will certainly achieve better.

These facts have been very much emphasized in the National Policy of Education and programme of Action which State that child-centred approach must be adopted. The techniques of behaviour modification which are based on the principles of learning are essentially child centred.

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